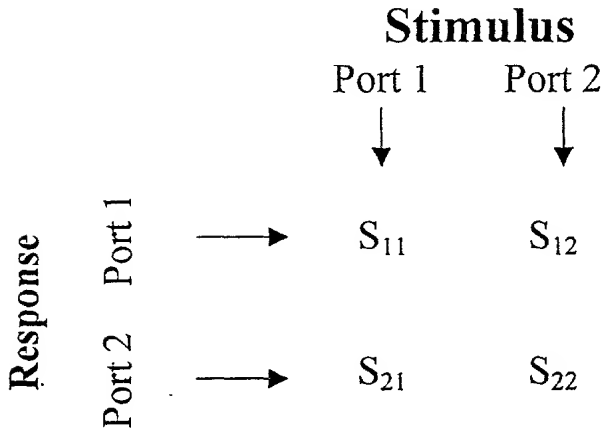
THE SINGLE-ENDED S-MATRIX

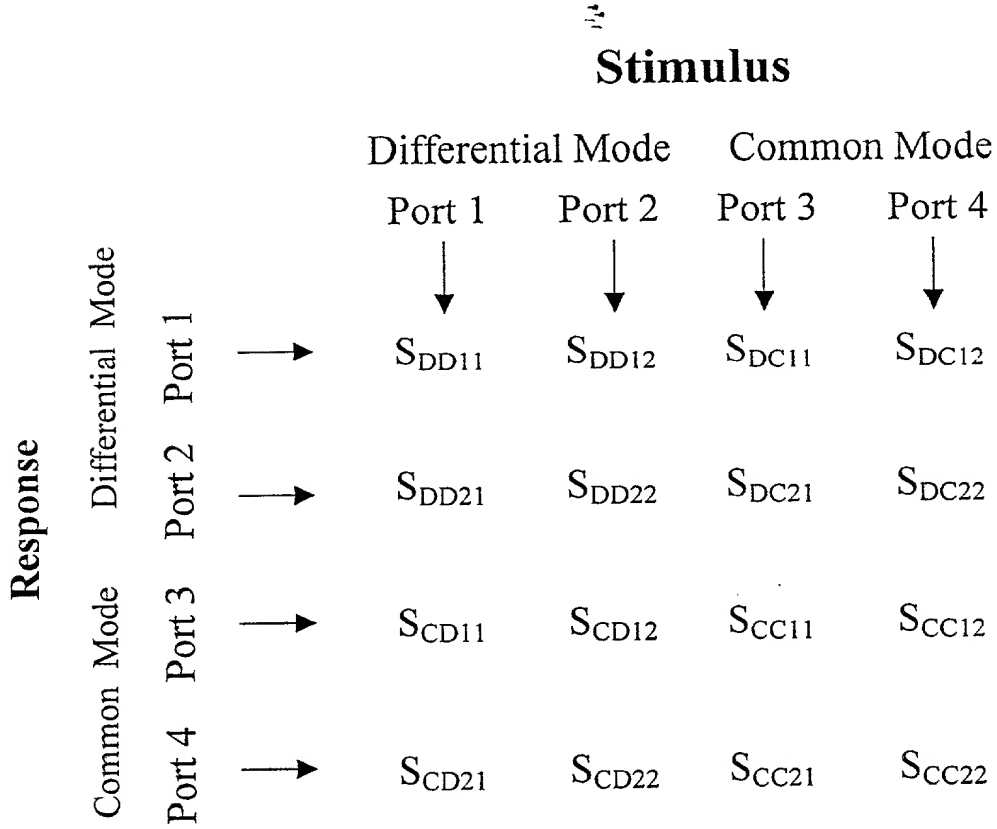


Syz
z = stimulus port
y = response port

FIG. 1(a)

(Related Art)

THE MIXED-MODE S-MATRIX



Swxyz

w = response mode **z = stimulus port**
x = stimulus mode **y = response port**

FIG. 1(b)

(Related Art)

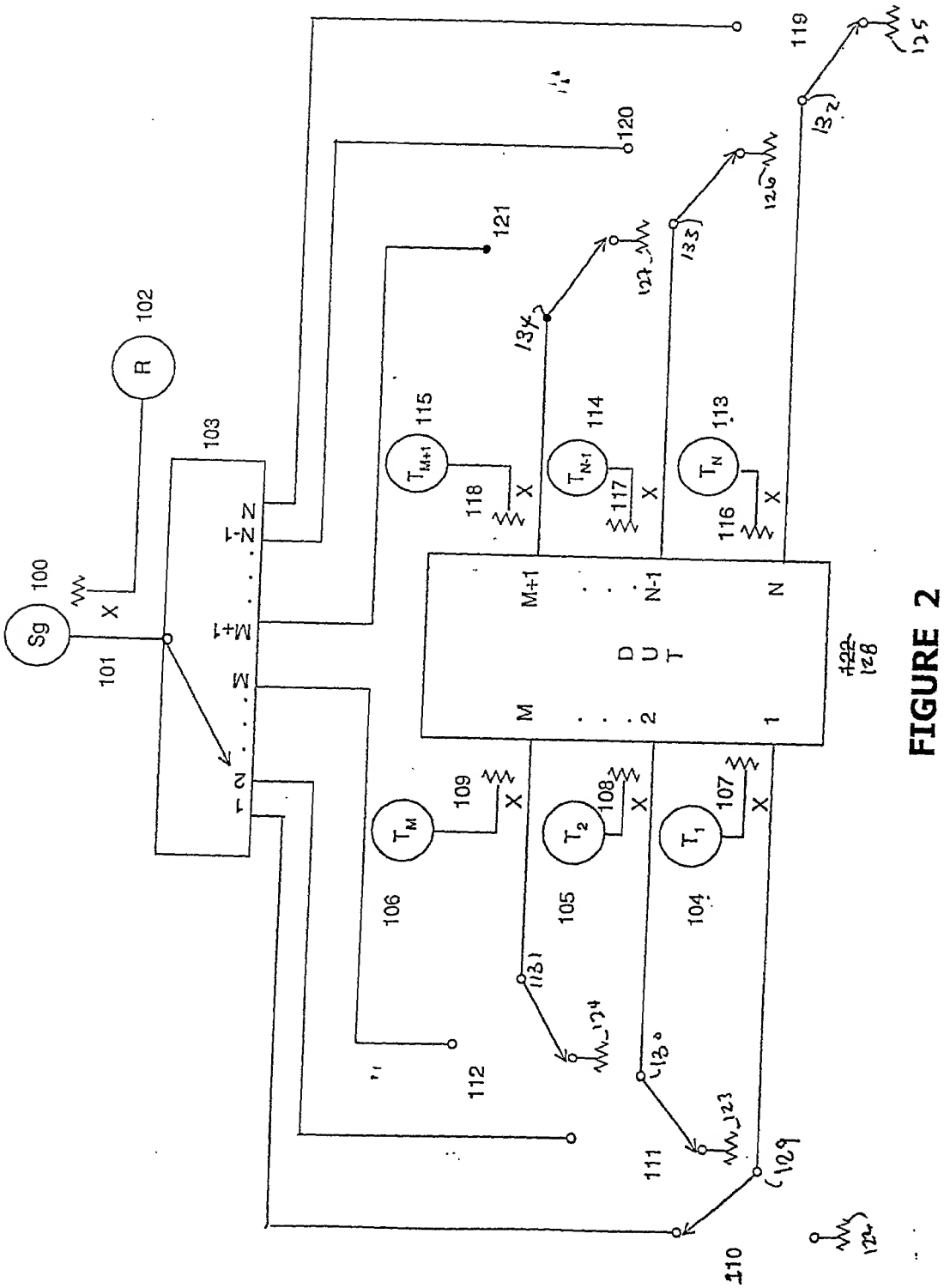

Sg
100
X
101
R
102
103
N
N-1
M+1
M
2
1
M+1
N-1
N
D
U
T
M
2
1
120
121
119
125
132
126
133
127
134
T_{M+1}
115
118
X
T_{N-1}
114
117
X
T_N
113
116
X
T_M
109
X
106
T_2
108
X
105
T_1
107
X
104
131
124
130
123
111
112
129
110
122
128

FIGURE 2

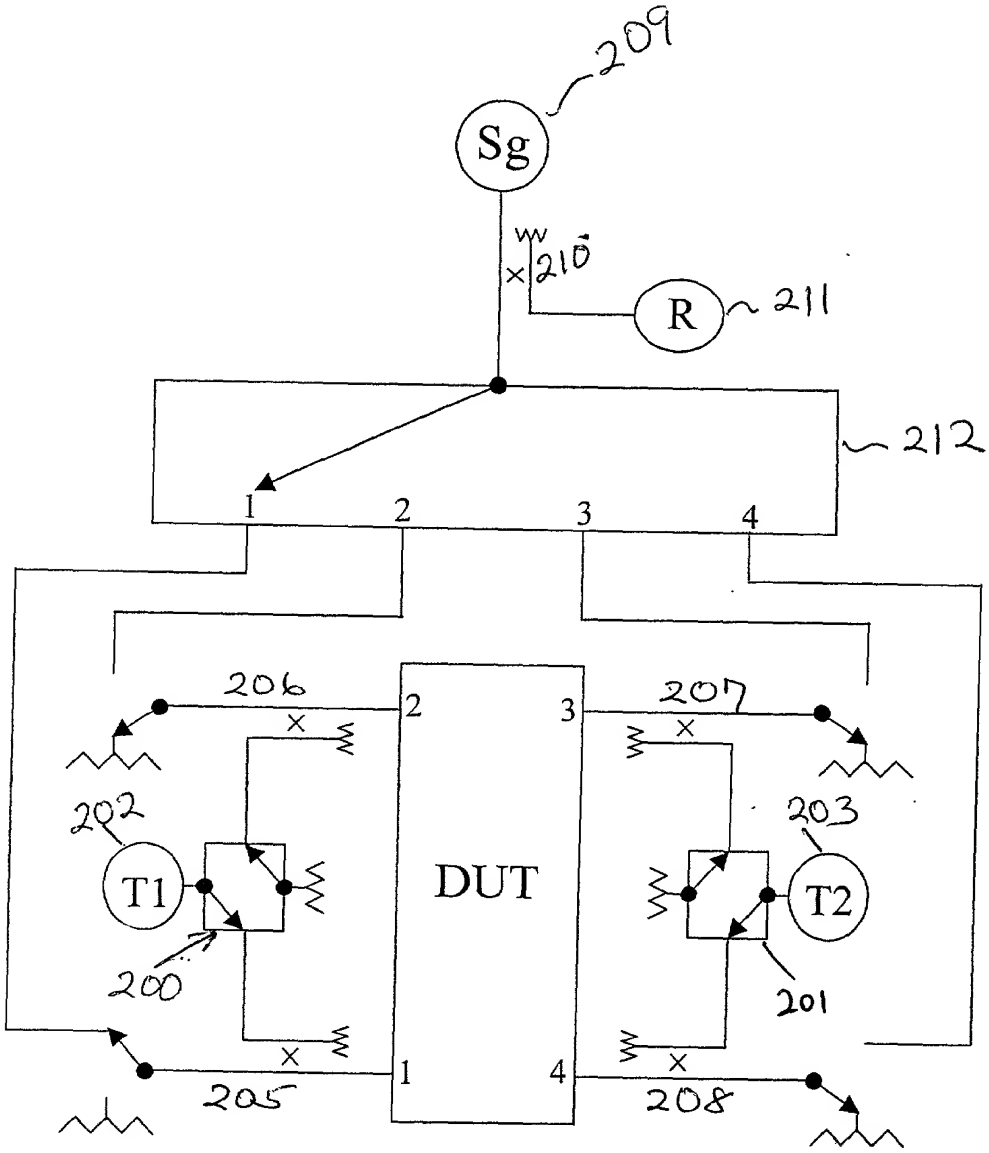

209
Sg
210
R
211
212
1
2
3
4
206
207
202
203
T1
T2
DUT
200
201
205
208

FIGURE 3

9-Port MTS Using 1 Reference & 3 Test Channel Receiver

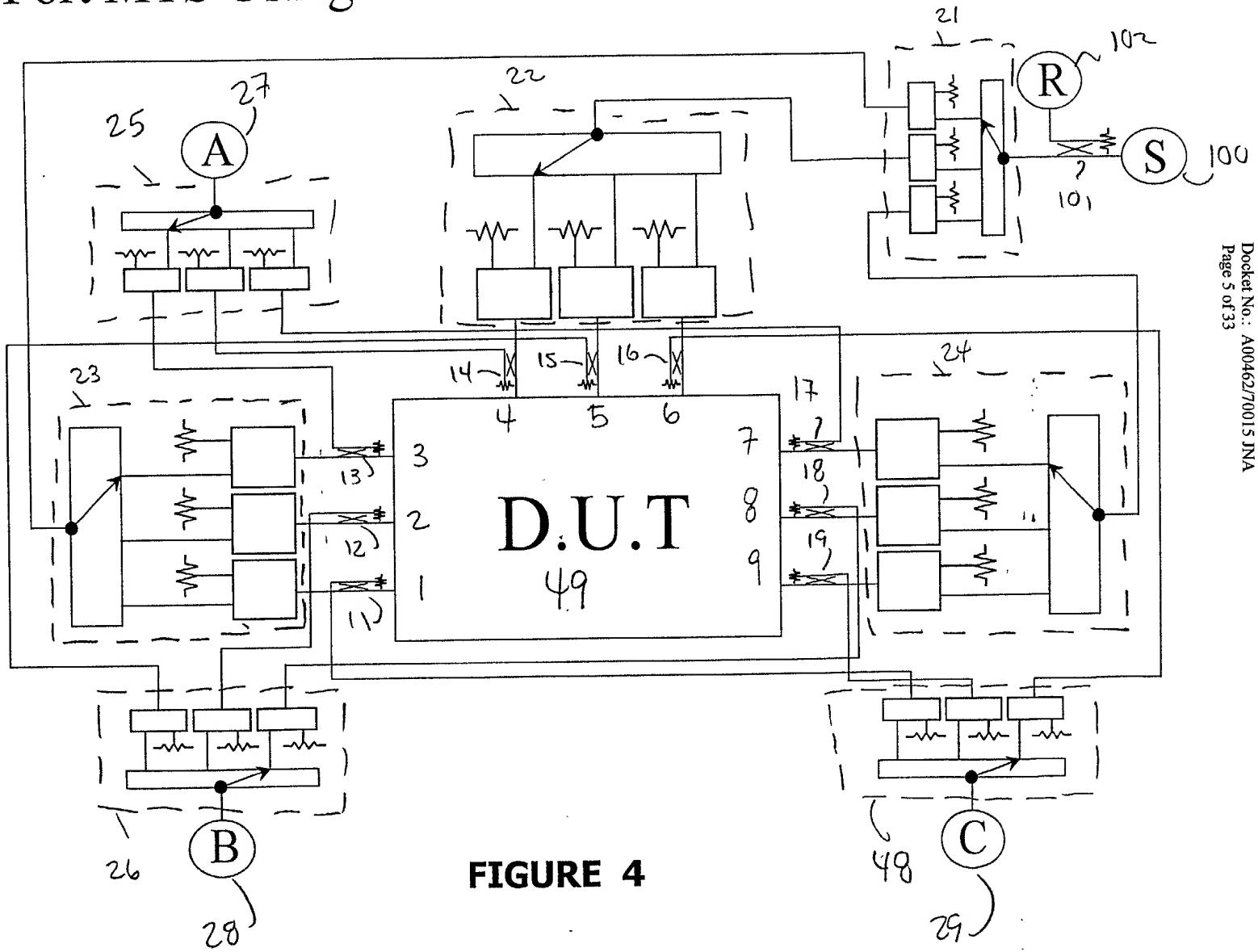


FIGURE 4

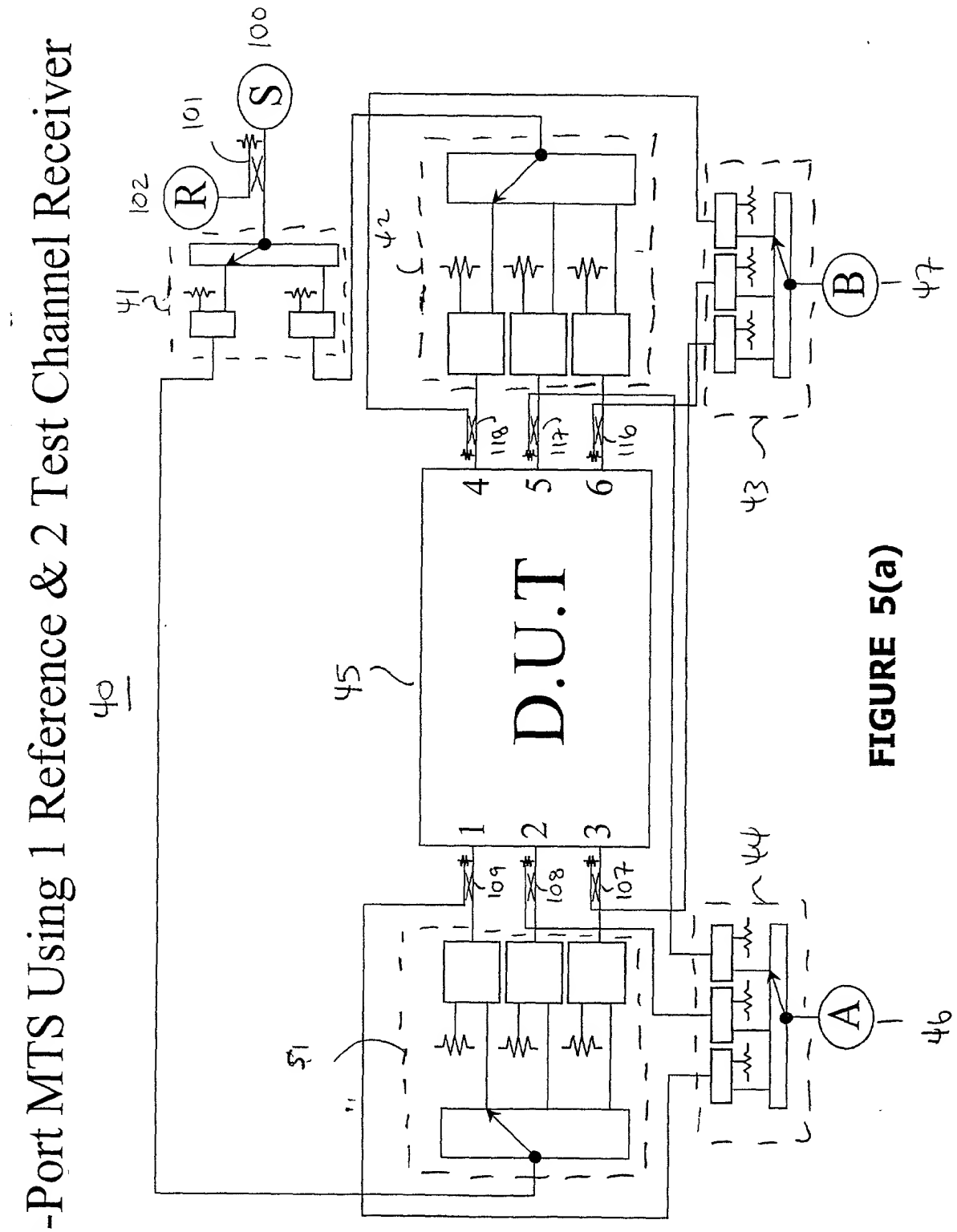

6-Port MTS Using 1 Reference & 2 Test Channel Receiver
40
S
100
R
101
102
41
42
B
47
43
118
117
116
4
5
6
D.U.T
45
1
2
3
109
108
107
51
A
46

FIGURE 5(a)

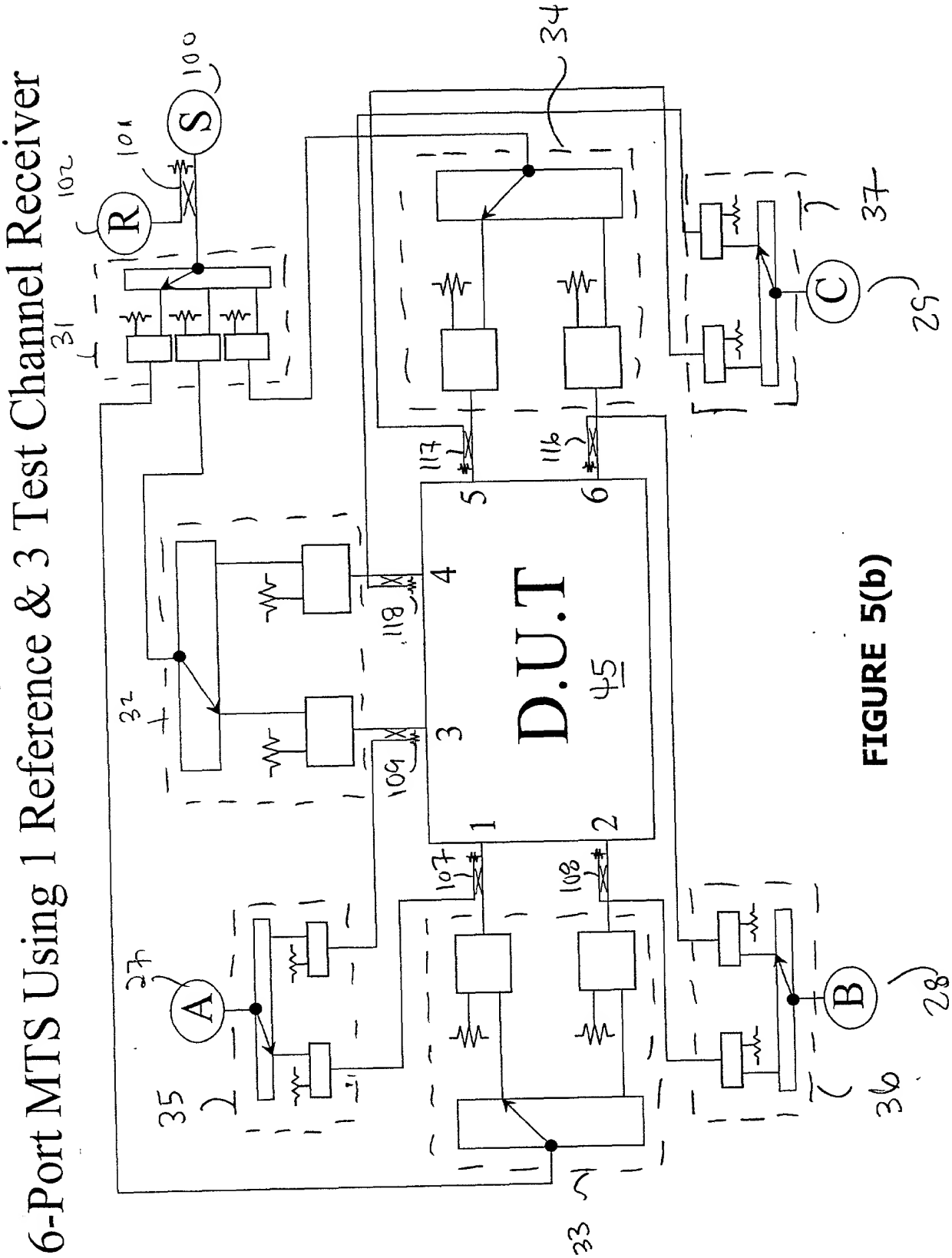

6-Port MTS Using 1 Reference & 3 Test Channel Receiver
D.U.T
S
R
A
B
C
1
2
3
4
5
6
100
101
102
107
108
109
116
117
118
25
26
27
28
29
30
31
32
33
34
35
36
37
45

FIGURE 5(b)

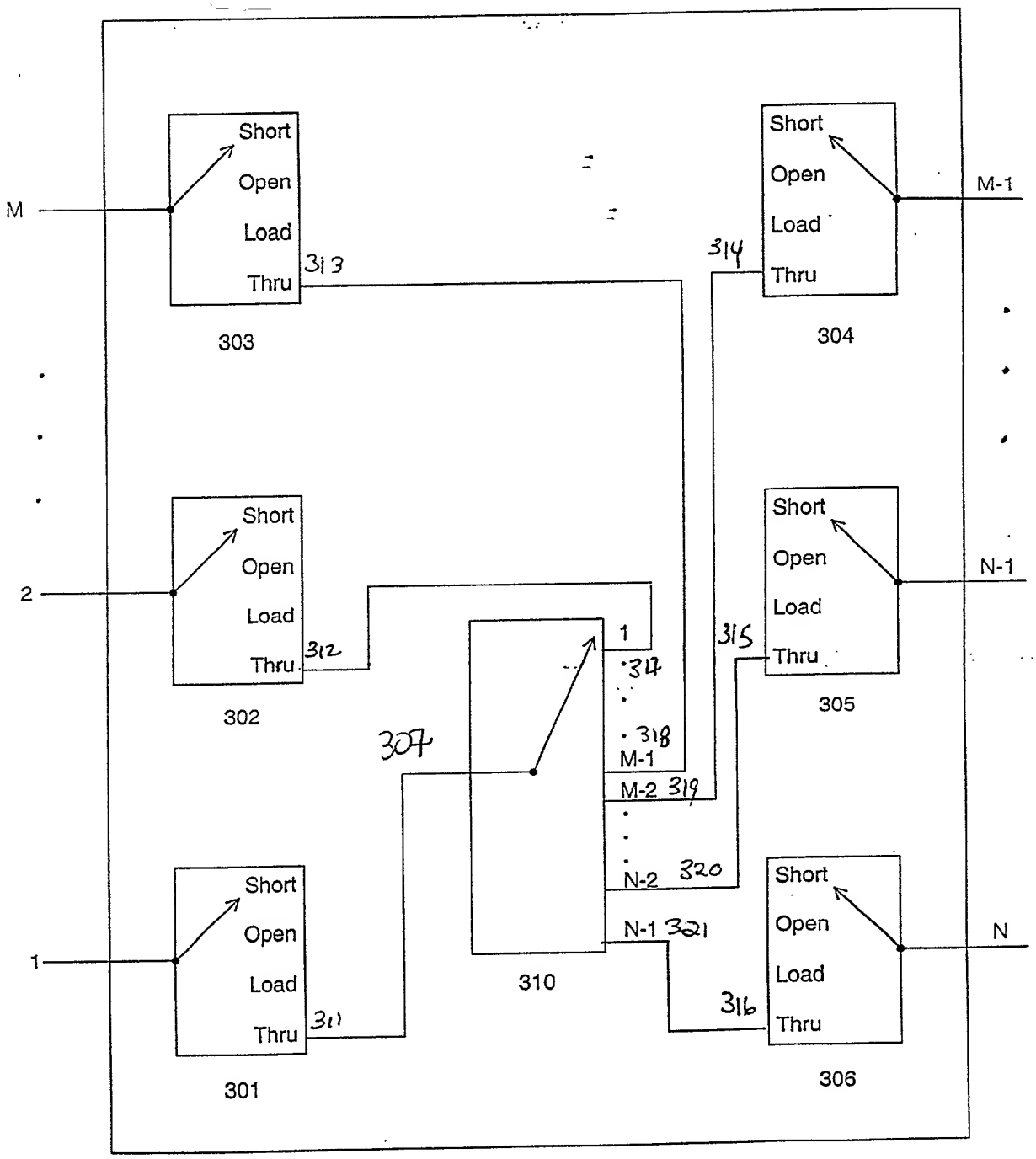


FIGURE 6
(Related Art)

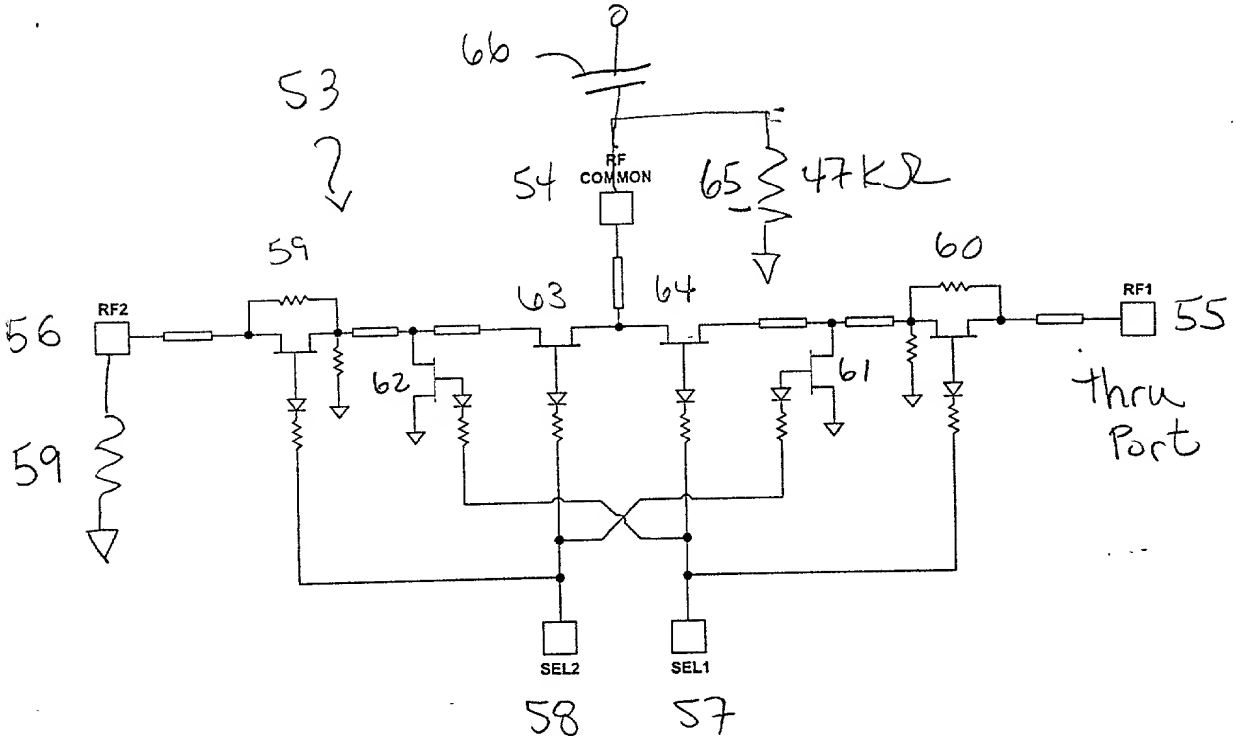

66
53
54
RF COMMON
65
47kΩ
59
60
63
64
RF2
RF1
56
55
62
61
thru Port
59
SEL2
SEL1
58
57

FIGURE 7

FET Switch Configurations

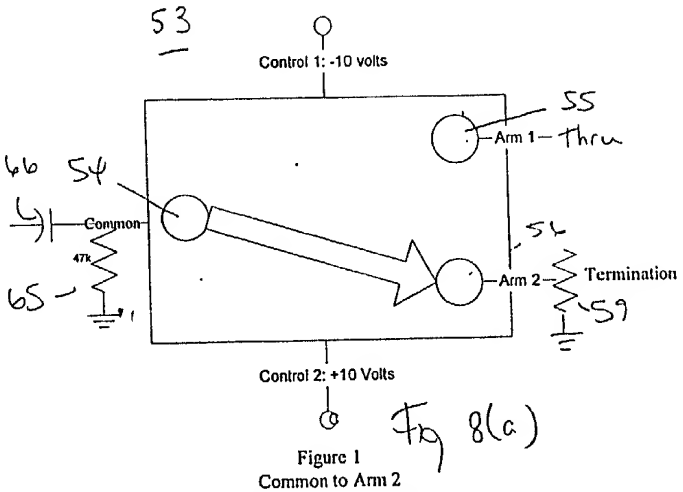


Figure 1
Common to Arm 2
Typical Termination State

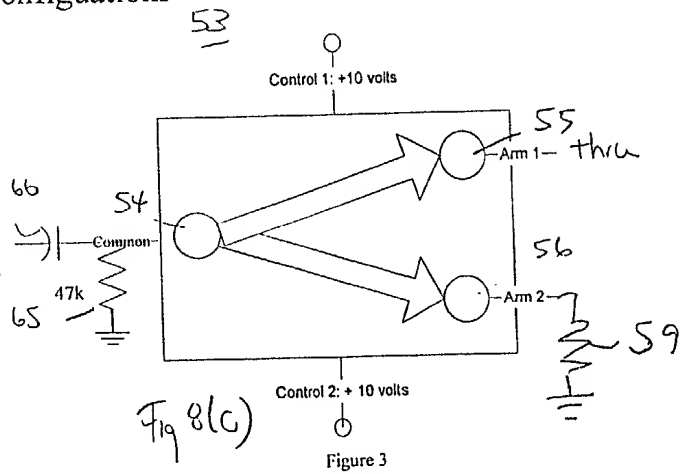


Figure 3
Common to Arm 1&2
Short Circuit

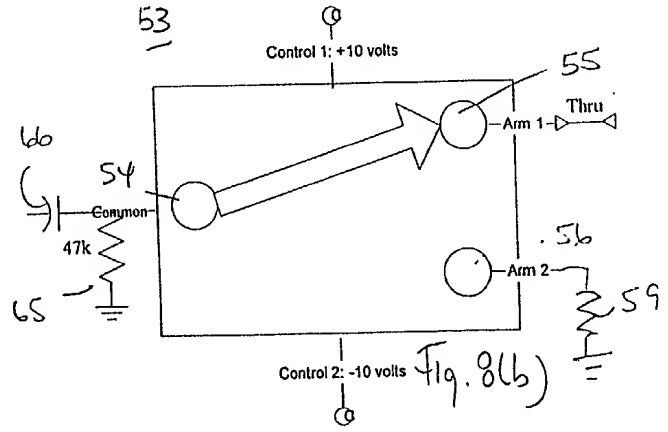


Figure 2
Common to Arm 1
Thru conditon

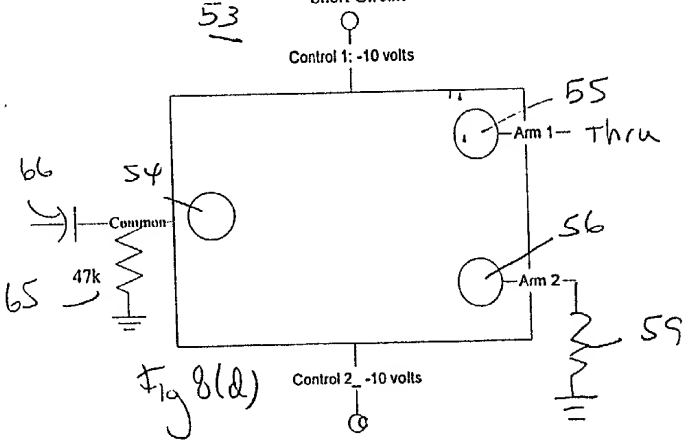


Figure 4
Both Arms off
Open Circuit

FIGURE 8

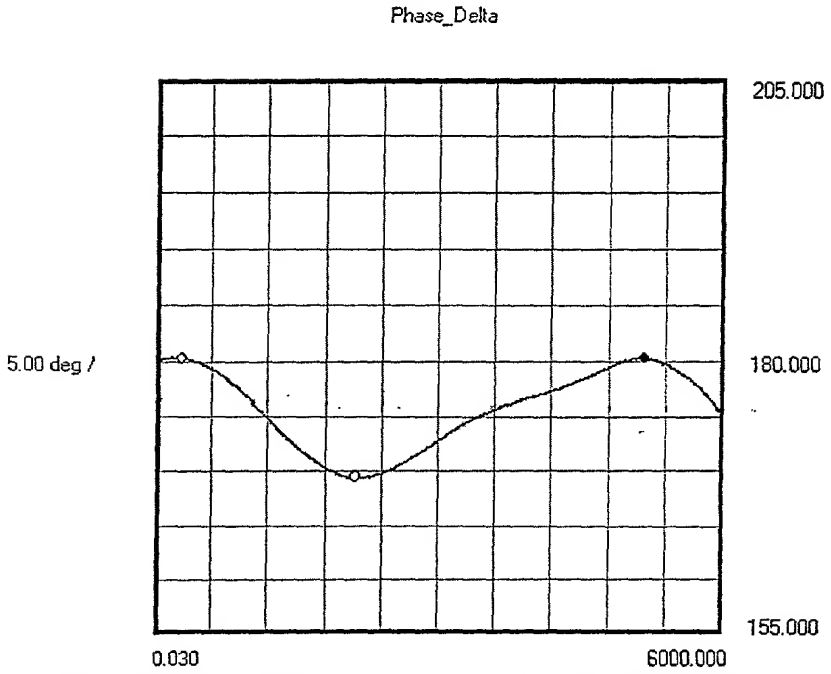

Phase_Delta
205.000
5.00 deg /
180.000
155.000
0.030
6000.000
Delta Phase between conditions, 1 (open), and state 2 (short) from 30 kHz to 6 GHz

FIGURE 9

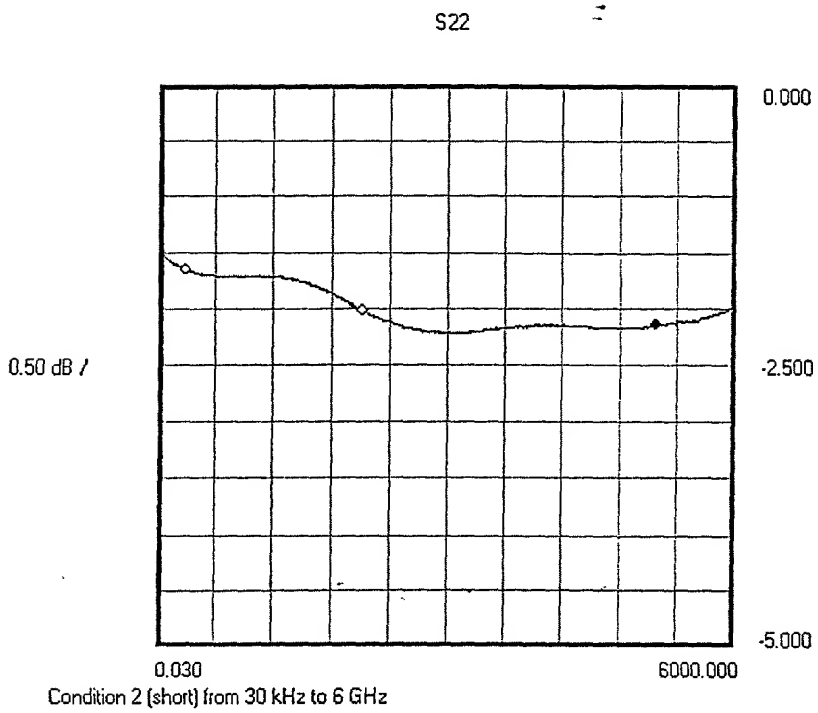

S22
0.000
0.50 dB /
-2.500
-5.000
0.030
6000.000
Condition 2 (short) from 30 kHz to 6 GHz

FIGURE 10

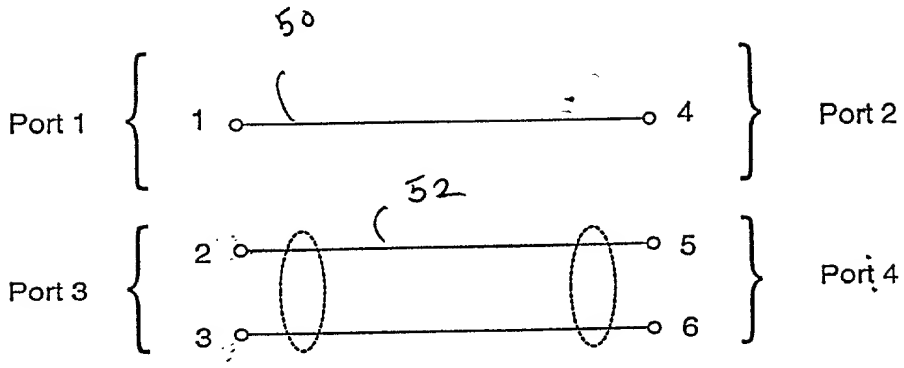


FIGURE 11

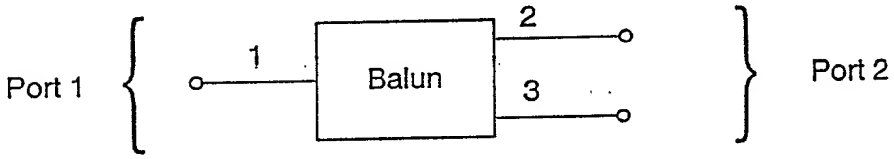


FIGURE 13

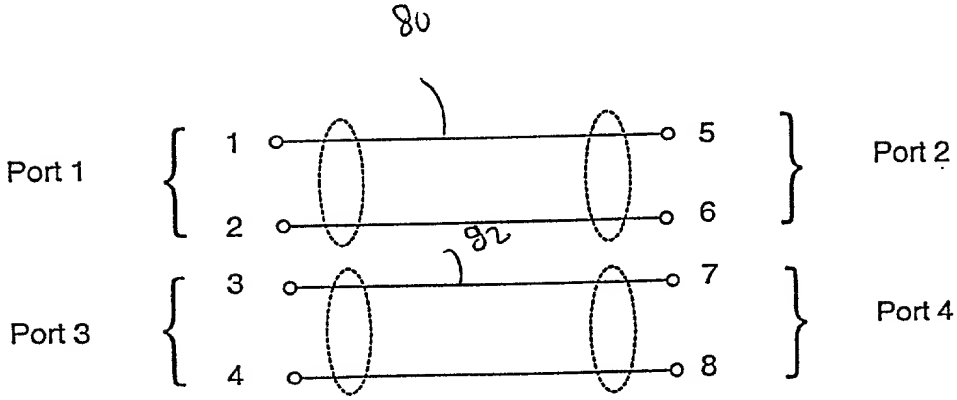


FIGURE 14

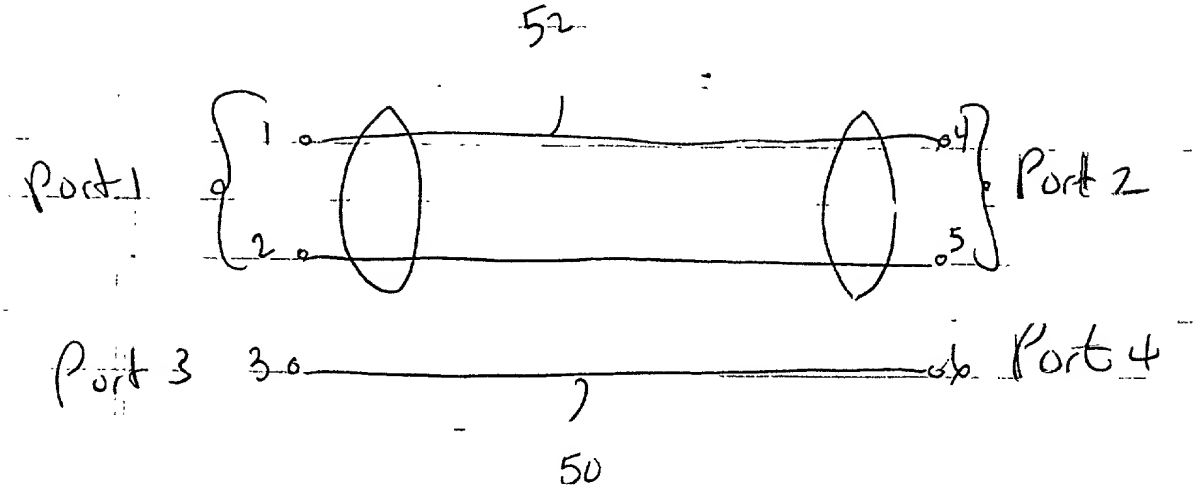


FIGURE 12

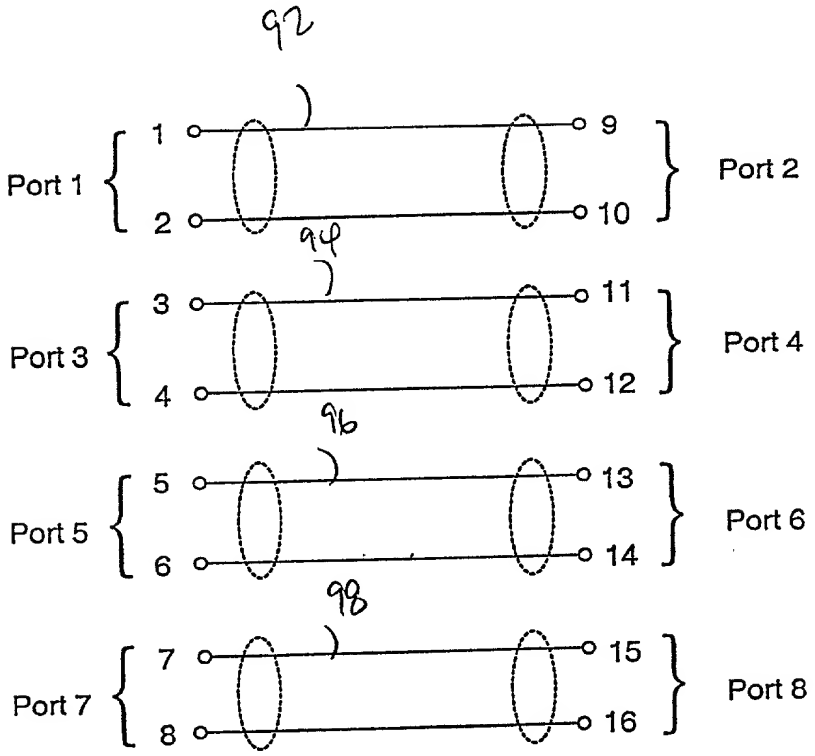

92
Port 1
1
2
9
10
Port 2
94
Port 3
3
4
11
12
Port 4
96
Port 5
5
6
13
14
Port 6
98
Port 7
7
8
15
16
Port 8

FIGURE 15

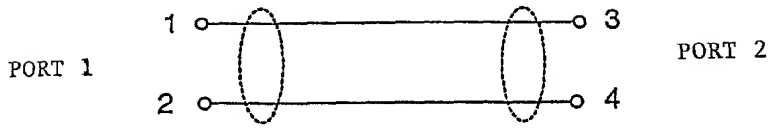


FIGURE 16

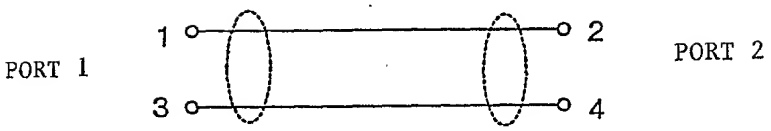


FIGURE 17

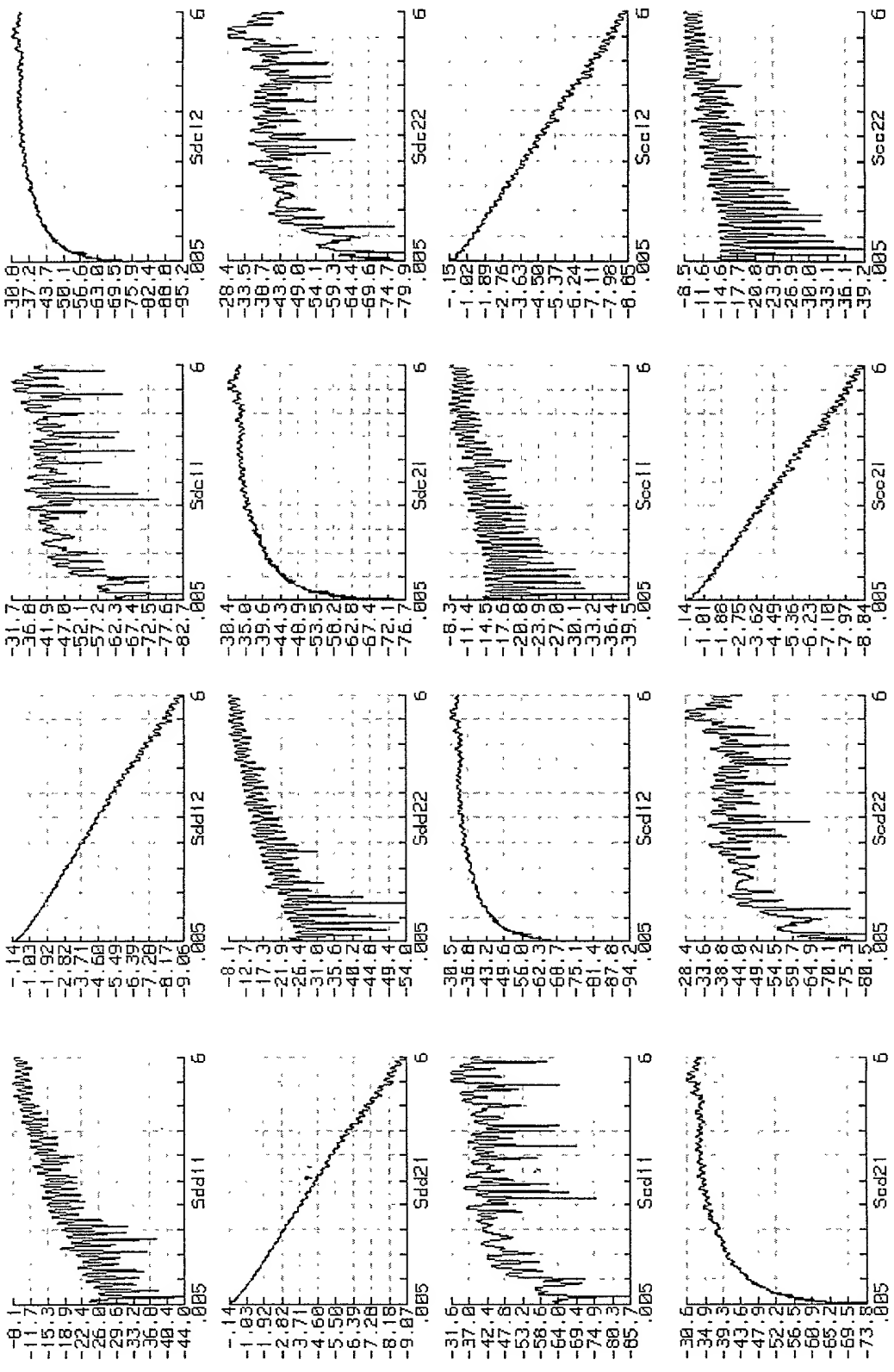

Sdd11
Sdd12
Sdc11
Sdc12
Sdd21
Sdd22
Sdc21
Sdc22
Scd11
Scd12
Scc11
Scc12
Scd21
Scd22
Scc21
Scc22

FIGURE 18

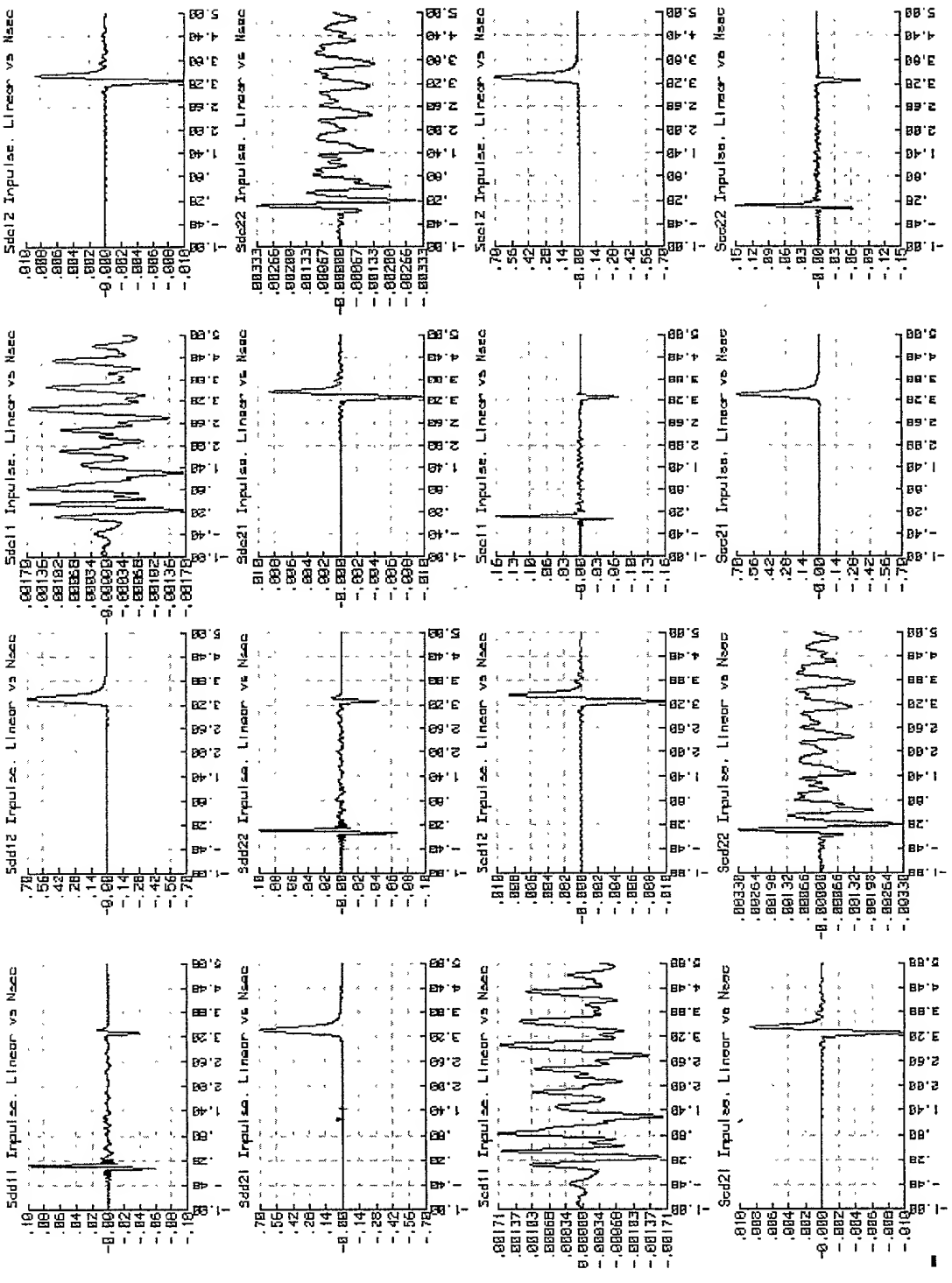


FIGURE 19

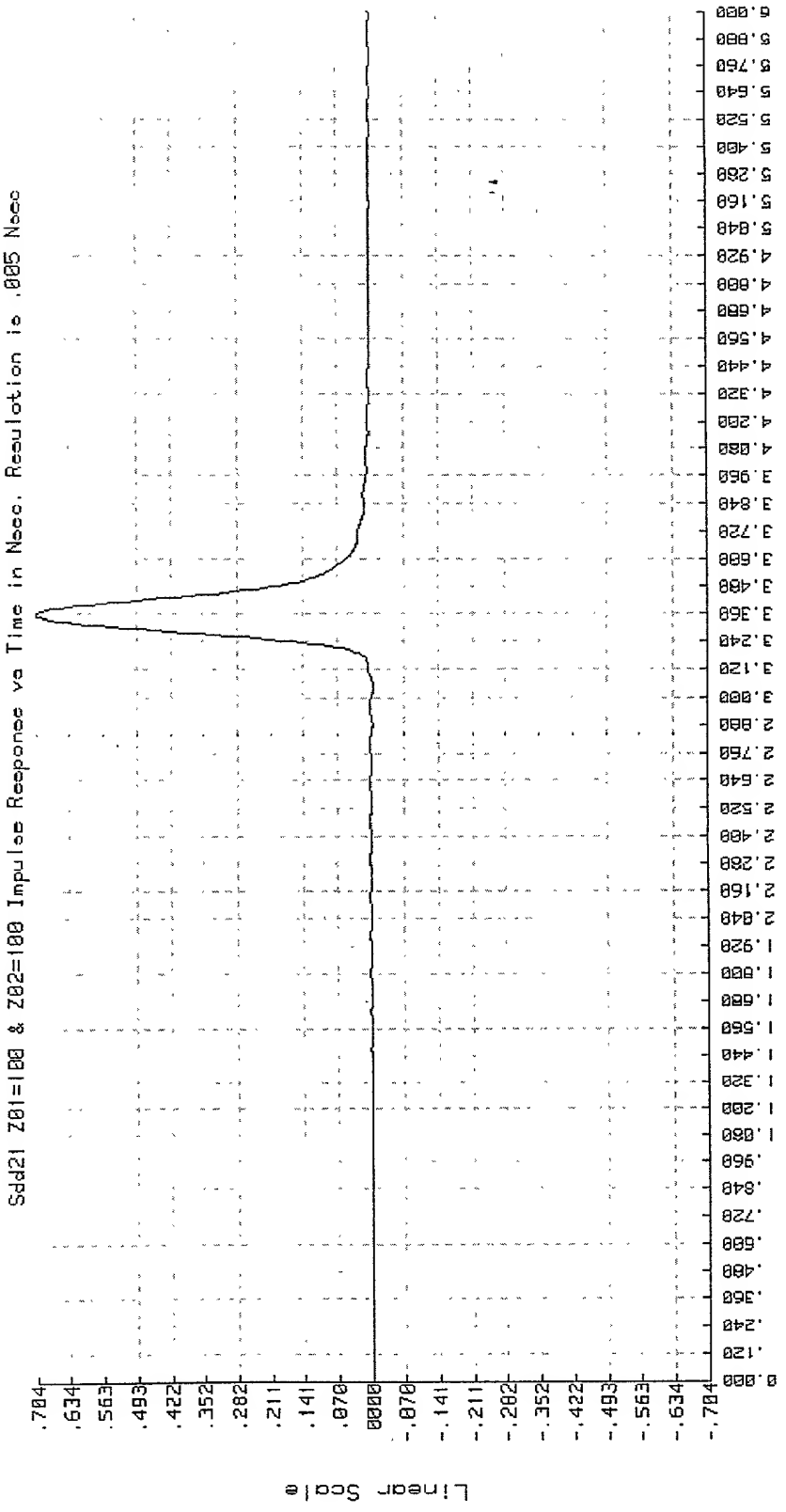

Sdd21 Z01=100 & Z02=100 Impulse Response vs Time in Nsec. Resolution is .005 Nsec
Linear Scale
.704
.634
.563
.493
.422
.352
.282
.211
.141
.070
.000
-.070
-.141
-.211
-.282
-.352
-.422
-.493
-.563
-.634
-.704
0.000
.120
.240
.360
.480
.600
.720
.840
.960
1.080
1.200
1.320
1.440
1.560
1.680
1.800
1.920
2.040
2.160
2.280
2.400
2.520
2.640
2.760
2.880
3.000
3.120
3.240
3.360
3.480
3.600
3.720
3.840
3.960
4.080
4.200
4.320
4.440
4.560
4.680
4.800
4.920
5.040
5.160
5.280
5.400
5.520
5.640
5.760
5.880
6.000

FIGURE 20

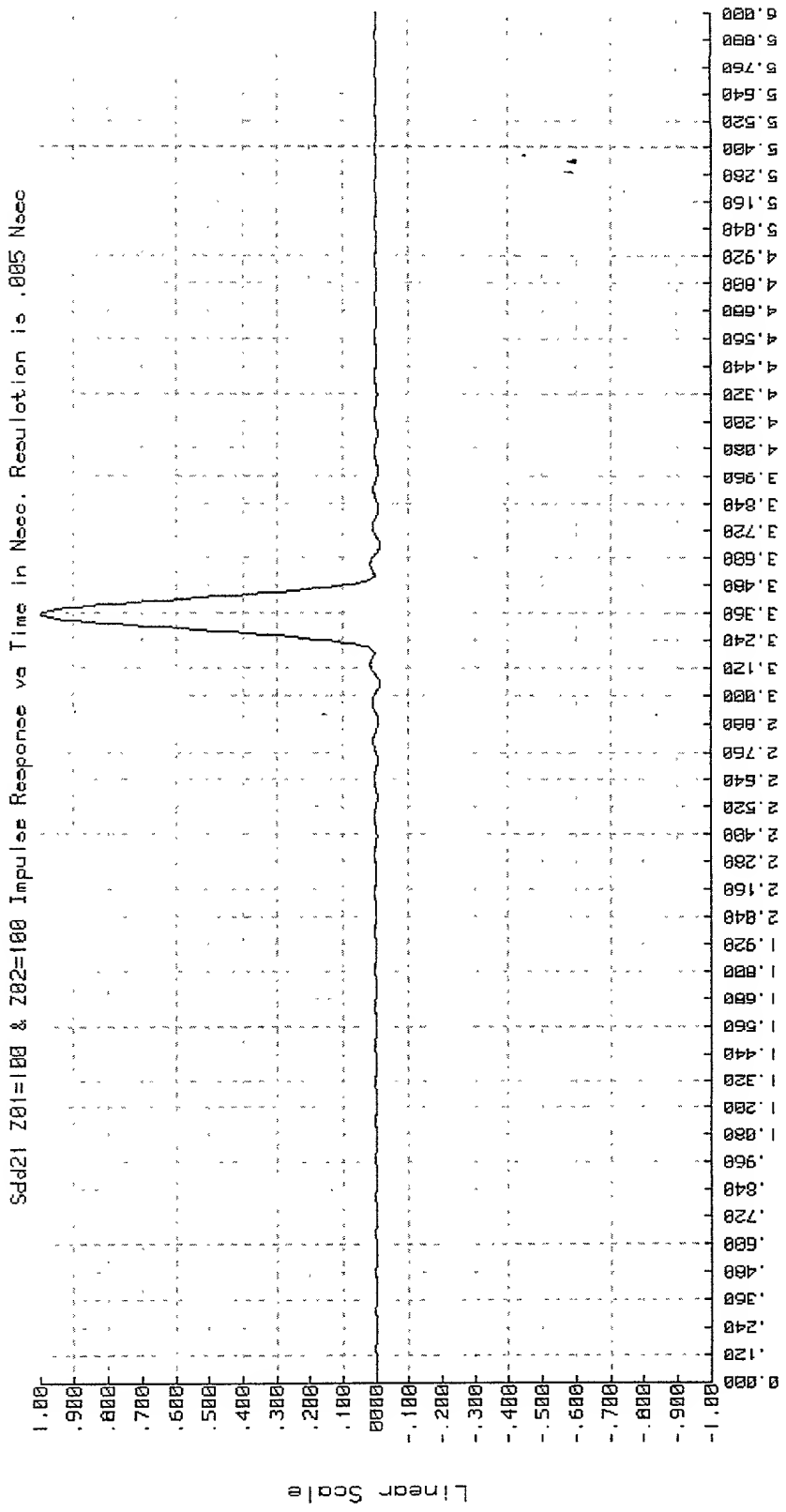

Sdd21 Z01=100 & Z02=100 Impulse Response vs Time in Nsec. Resulotion is .005 Nsec
Linear Scale
1.00
.900
.800
.700
.600
.500
.400
.300
.200
.100
0000
-.100
-.200
-.300
-.400
-.500
-.600
-.700
-.800
-.900
-1.00
0.000
.120
.240
.360
.480
.600
.728
.848
.968
1.080
1.200
1.320
1.440
1.560
1.680
1.800
1.928
2.048
2.168
2.288
2.408
2.528
2.648
2.768
2.888
3.008
3.128
3.248
3.368
3.488
3.608
3.728
3.848
3.968
4.088
4.208
4.328
4.448
4.568
4.688
4.808
4.928
5.048
5.168
5.288
5.408
5.528
5.648
5.768
5.888
6.008

FIGURE 21

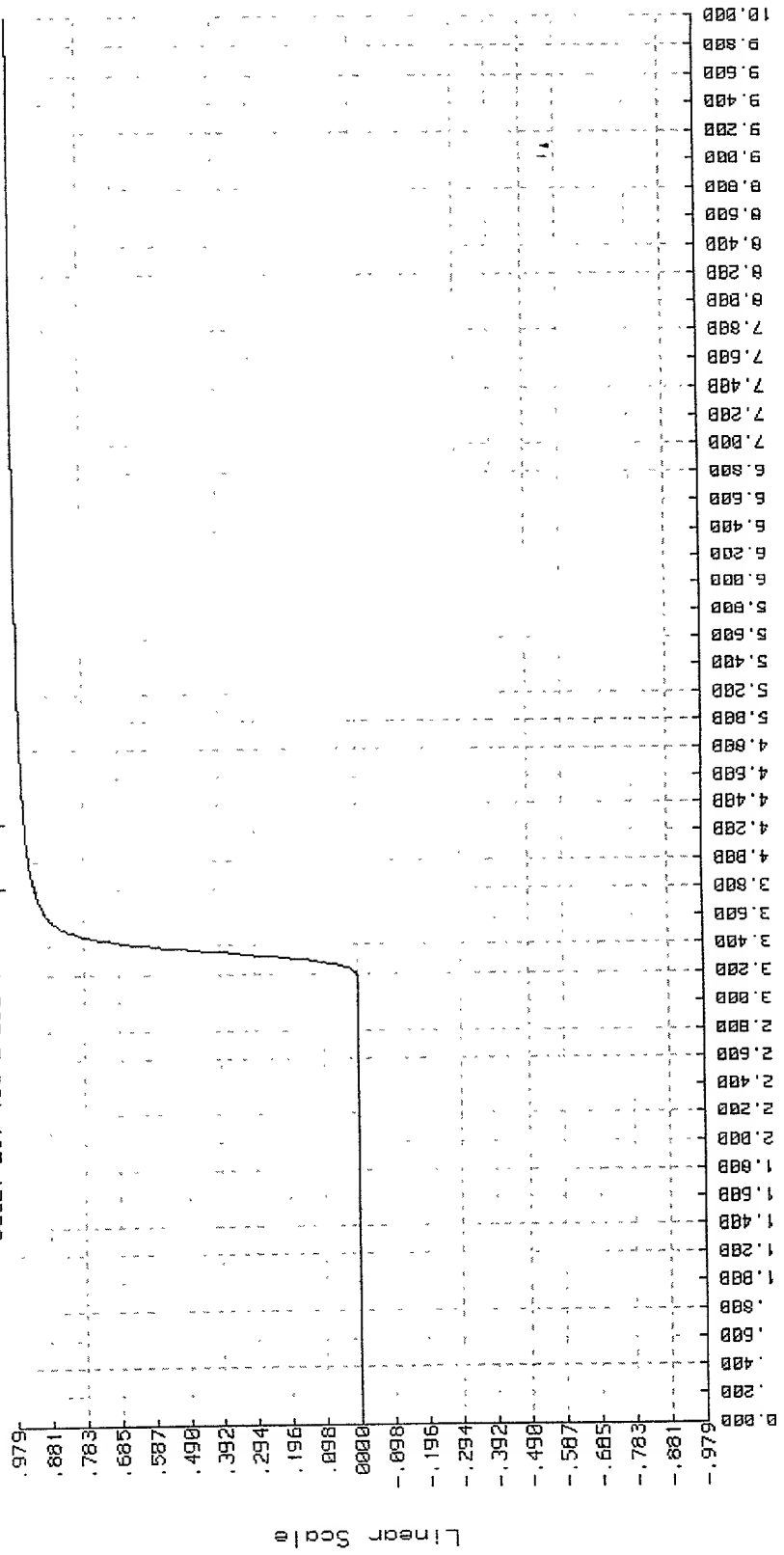

Sdd21 Z01=100 & Z02=100 Step Response vs Time in Nsec. Resulotion is .00834 Nsec
Linear Scale
.979
.881
.783
.685
.587
.490
.392
.294
.196
.098
0000
-.098
-.196
-.294
-.392
-.490
-.587
-.685
-.783
-.881
-.979
0.000
.200
.400
.600
.800
1.000
1.200
1.400
1.600
1.800
2.000
2.200
2.400
2.600
2.800
3.000
3.200
3.400
3.600
3.800
4.000
4.200
4.400
4.600
4.800
5.000
5.200
5.400
5.600
5.800
6.000
6.200
6.400
6.600
6.800
7.000
7.200
7.400
7.600
7.800
8.000
8.200
8.400
8.600
8.800
9.000
9.200
9.400
9.600
9.800
10.000

FIGURE 22

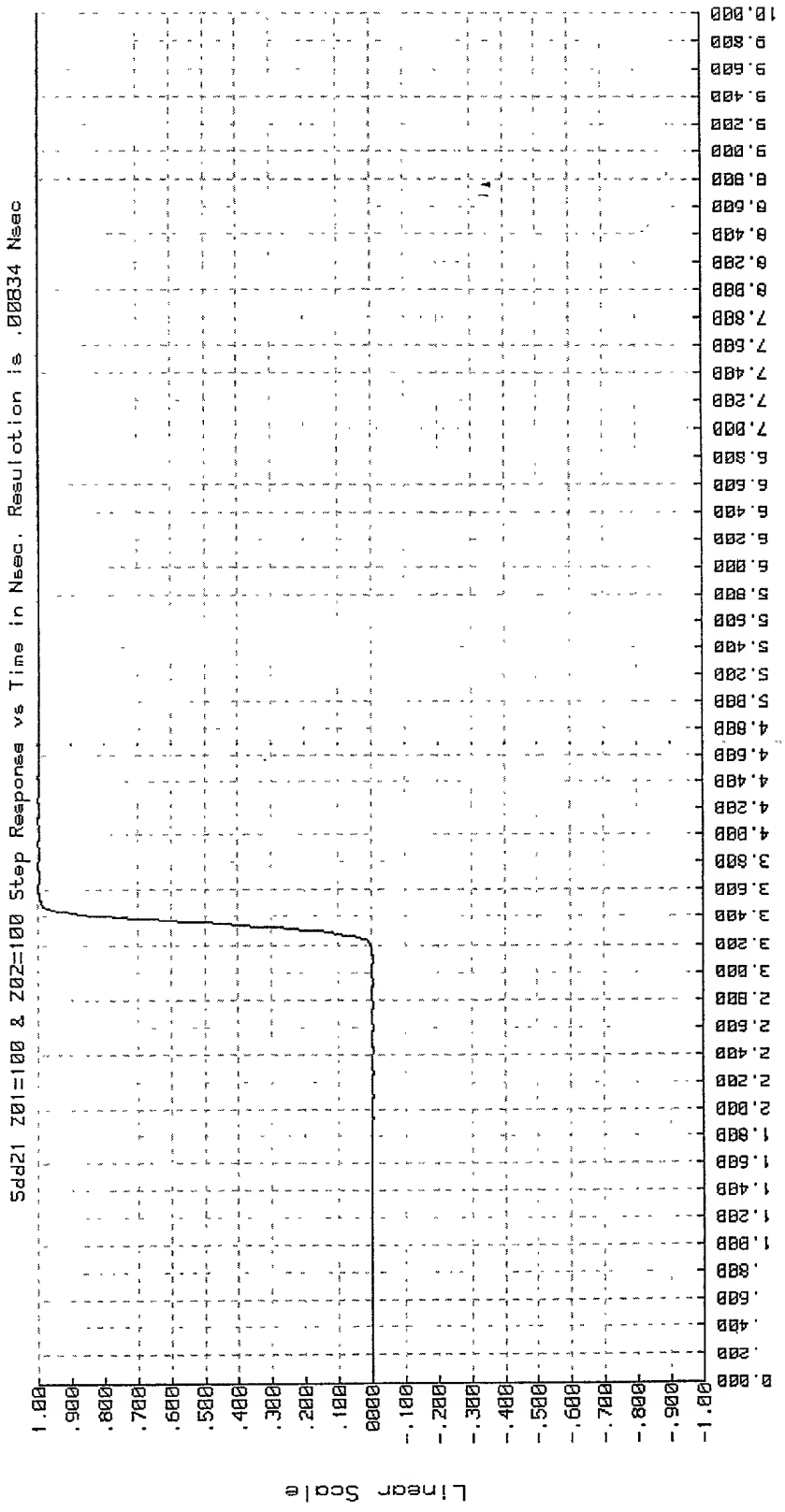

Sdd21 Z01=100 & Z02=100 Step Response vs Time in Nsec. Resulotion is .00834 Nsec
Linear Scale
1.00
.900
.800
.700
.600
.500
.400
.300
.200
.100
0000
-.100
-.200
-.300
-.400
-.500
-.600
-.700
-.800
-.900
-1.00
10.000
9.800
9.600
9.400
9.200
9.000
8.800
8.600
8.400
8.200
8.000
7.800
7.600
7.400
7.200
7.000
6.800
6.600
6.400
6.200
6.000
5.800
5.600
5.400
5.200
5.000
4.800
4.600
4.400
4.200
4.000
3.800
3.600
3.400
3.200
3.000
2.800
2.600
2.400
2.200
2.000
1.800
1.600
1.400
1.200
1.000
.800
.600
.400
.200
0.000

FIGURE 23

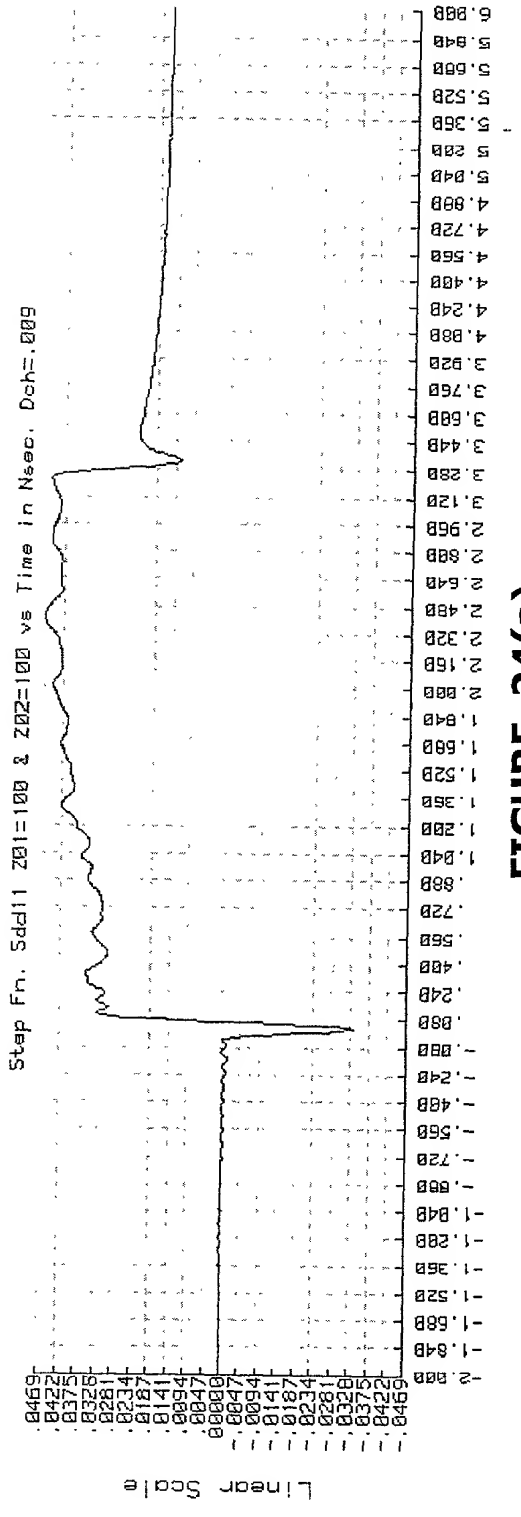


FIGURE 24(a)

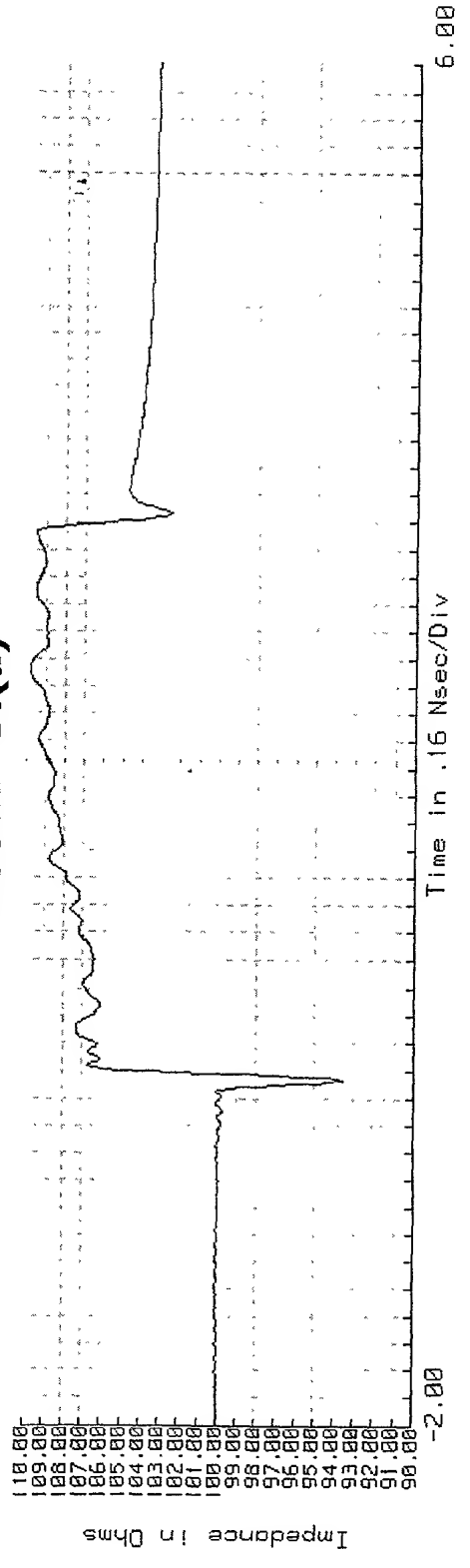


FIGURE 24(b)

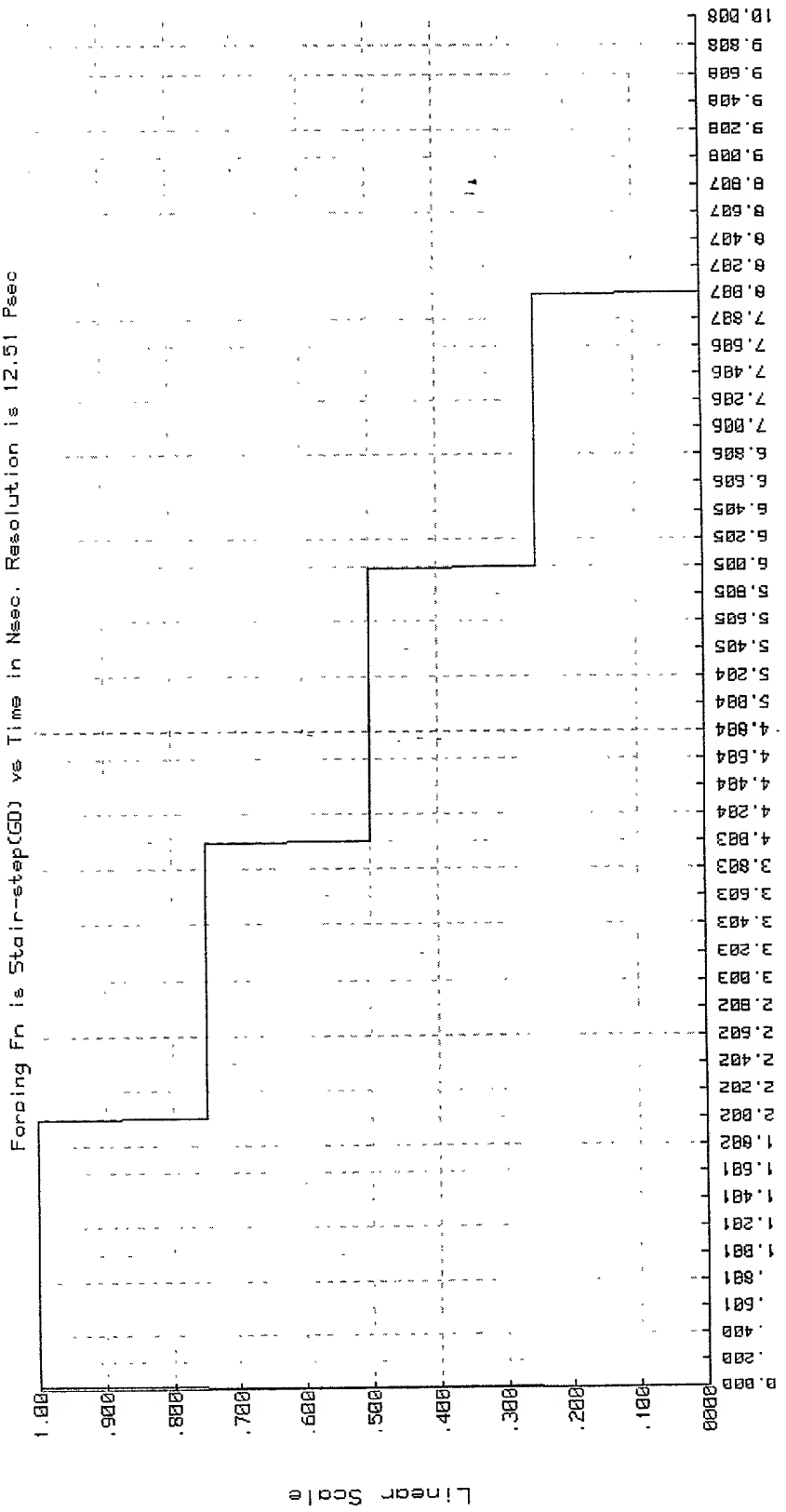

Forcing Fn is Stair-step(GD) vs Time in Nsec. Resolution is 12.51 Psec
Linear Scale
1.00
.900
.800
.700
.600
.500
.400
.300
.200
.100
0000
0.000
.200
.400
.601
.801
1.001
1.201
1.401
1.601
1.802
2.002
2.202
2.402
2.602
2.802
3.003
3.203
3.403
3.603
3.803
4.003
4.204
4.404
4.604
4.804
5.004
5.204
5.405
5.605
5.805
6.005
6.205
6.405
6.606
6.806
7.006
7.206
7.406
7.606
7.807
8.007
8.207
8.407
8.607
8.807
9.008
9.208
9.408
9.608
9.808
10.008

FIGURE 25

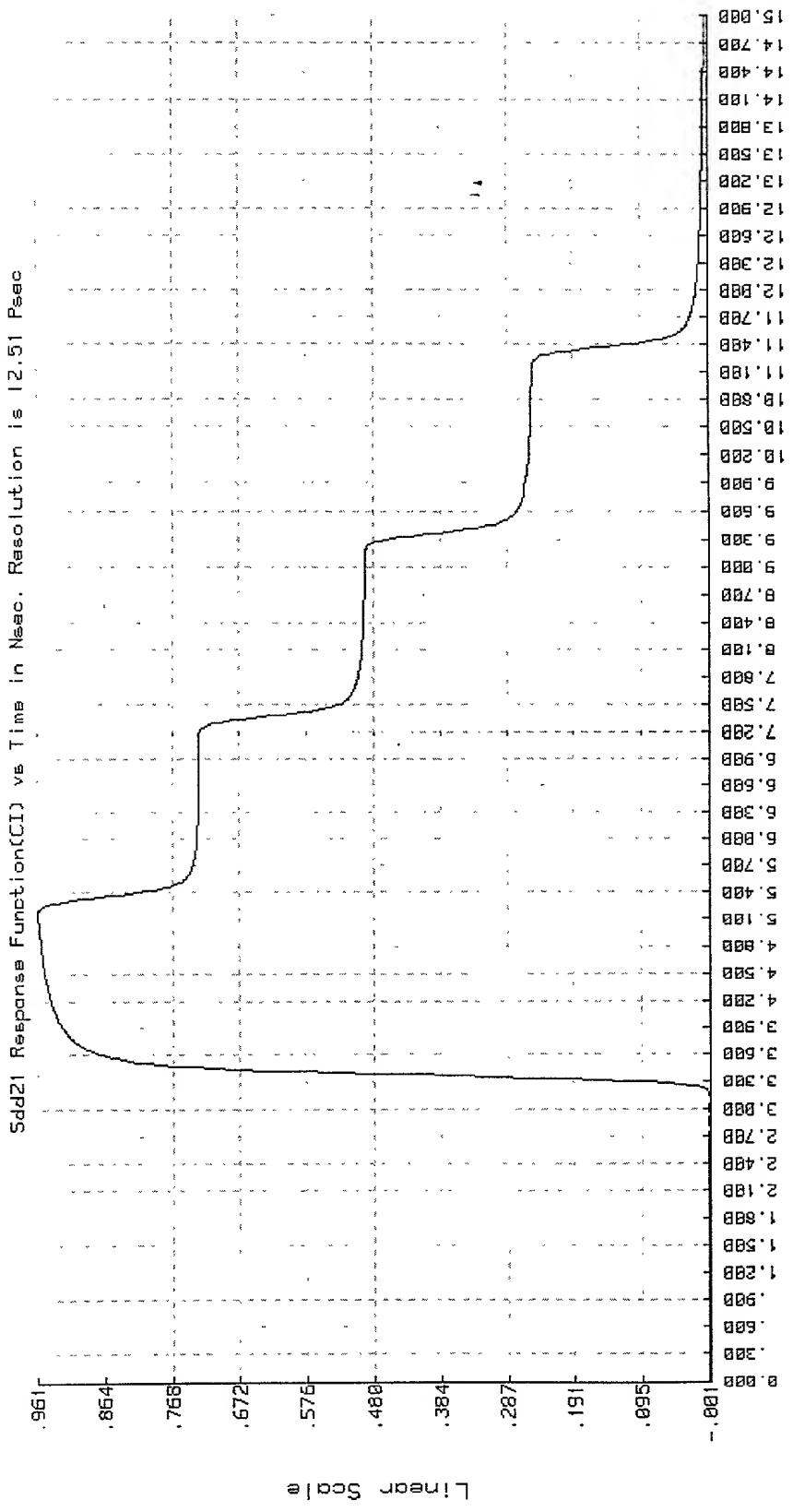

Sdd21 Response Function(CI) vs Time in Nsec. Resolution is 12.51 Psec
Linear Scale
.961
.864
.768
.672
.576
.480
.384
.287
.191
.095
-.001
0.000
.300
.600
.900
1.200
1.500
1.800
2.100
2.400
2.700
3.000
3.300
3.600
3.900
4.200
4.500
4.800
5.100
5.400
5.700
6.000
6.300
6.600
6.900
7.200
7.500
7.800
8.100
8.400
8.700
9.000
9.300
9.600
9.900
10.200
10.500
10.800
11.100
11.400
11.700
12.000
12.300
12.600
12.900
13.200
13.500
13.800
14.100
14.400
14.700
15.000

FIGURE 26

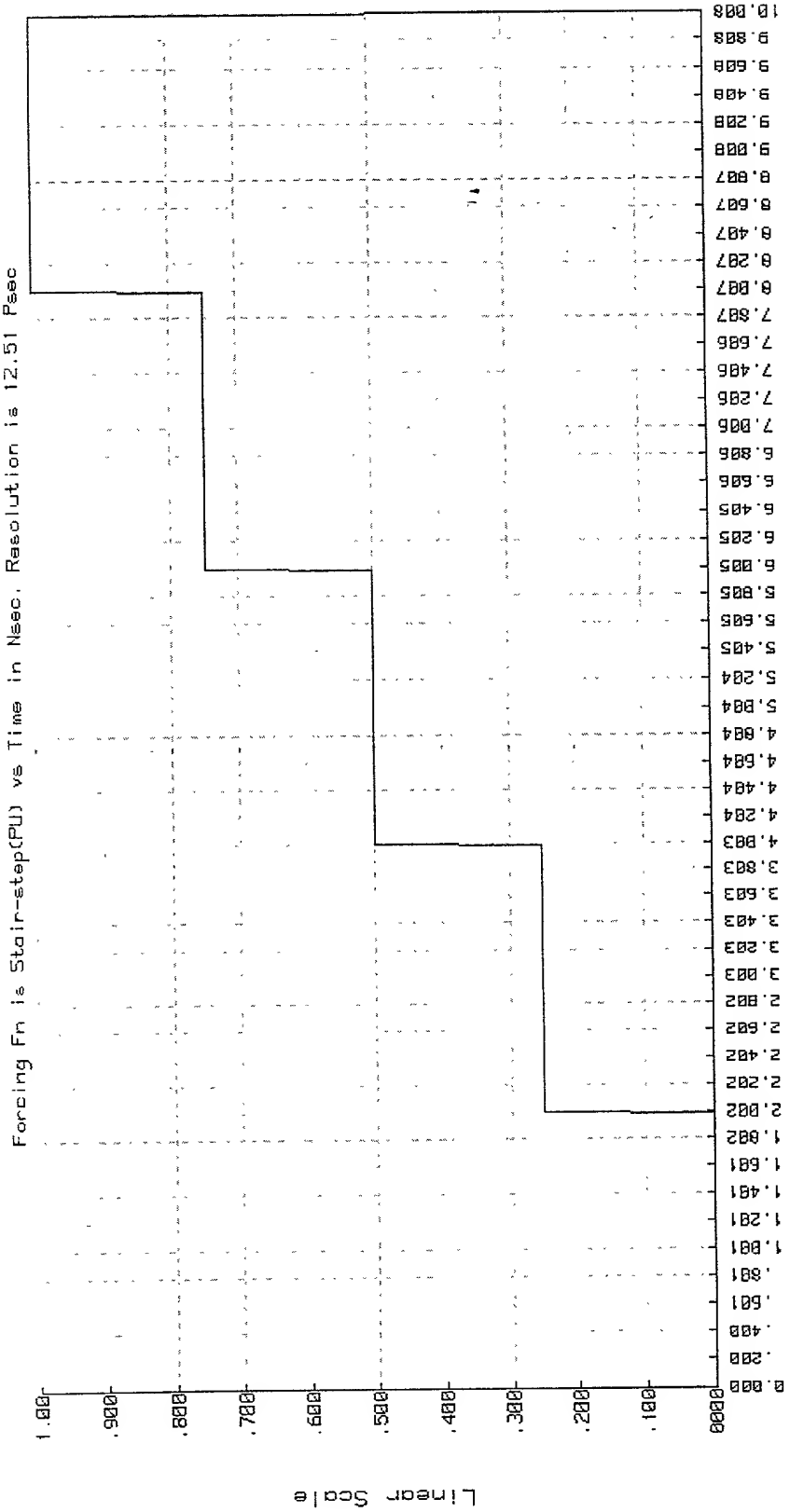

Forcing Fn is Stair-step(PU) vs Time in Nsec. Resolution is 12.51 Psec
10.008
9.808
9.608
9.408
9.208
9.008
8.807
8.607
8.407
8.207
8.007
7.807
7.606
7.406
7.206
7.006
6.806
6.606
6.405
6.205
6.005
5.805
5.605
5.405
5.204
5.004
4.804
4.604
4.404
4.204
4.003
3.803
3.603
3.403
3.203
3.003
2.802
2.602
2.402
2.202
2.002
1.802
1.601
1.401
1.201
1.001
.801
.601
.400
.200
0.000
1.00
.900
.800
.700
.600
.500
.400
.300
.200
.100
0000
Linear Scale

FIGURE 27

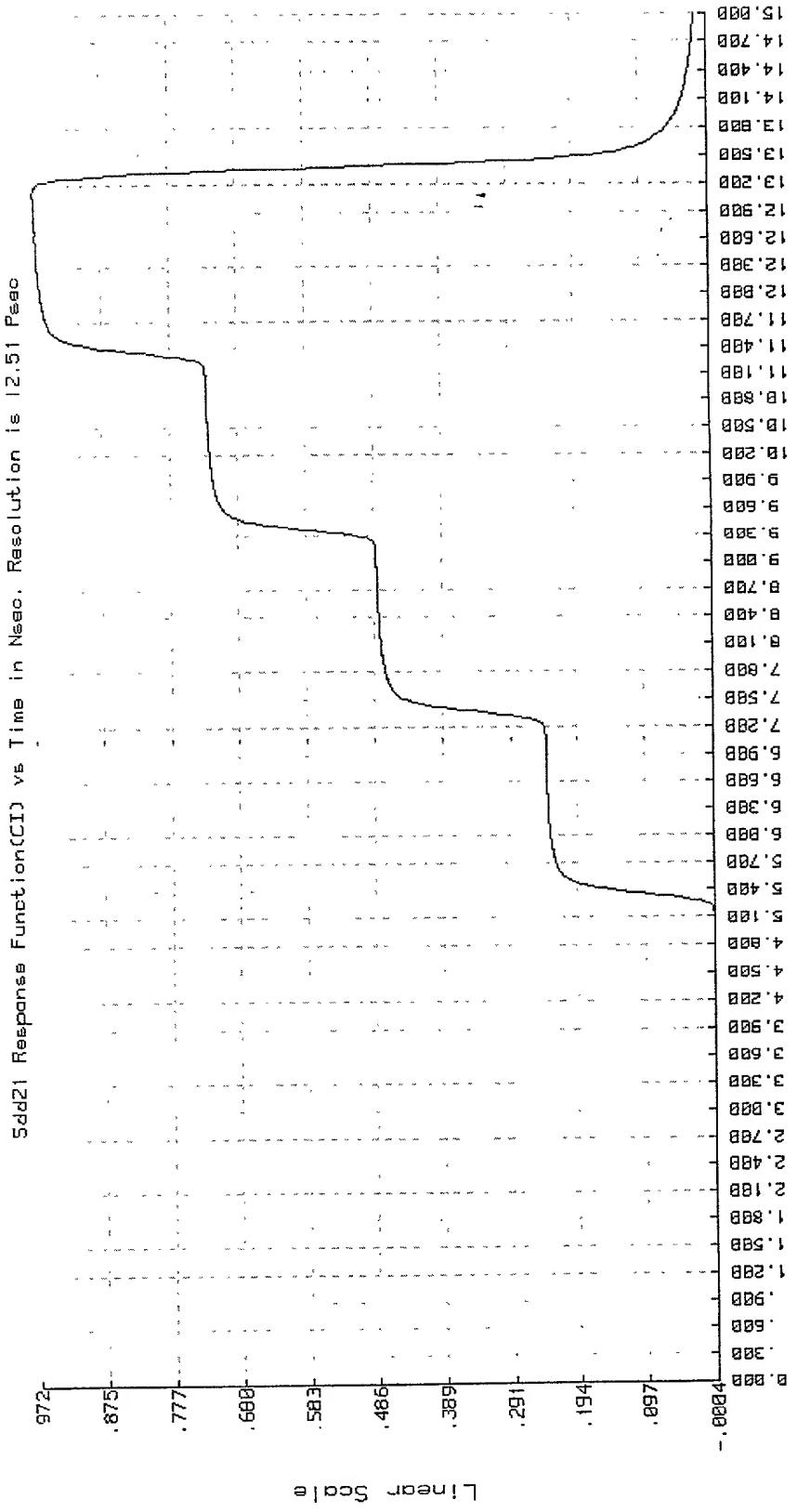

Sdd21 Response Function(CI) vs Time in Nsec. Resolution is 12.51 Psec
Linear Scale
.972
.875
.777
.680
.583
.486
.389
.291
.194
.097
-.0004
0.000
.300
.600
.900
1.200
1.500
1.800
2.100
2.400
2.700
3.000
3.300
3.600
3.900
4.200
4.500
4.800
5.100
5.400
5.700
6.000
6.300
6.600
6.900
7.200
7.500
7.800
8.100
8.400
8.700
9.000
9.300
9.600
9.900
10.200
10.500
10.800
11.100
11.400
11.700
12.000
12.300
12.600
12.900
13.200
13.500
13.800
14.100
14.400
14.700
15.000

FIGURE 28

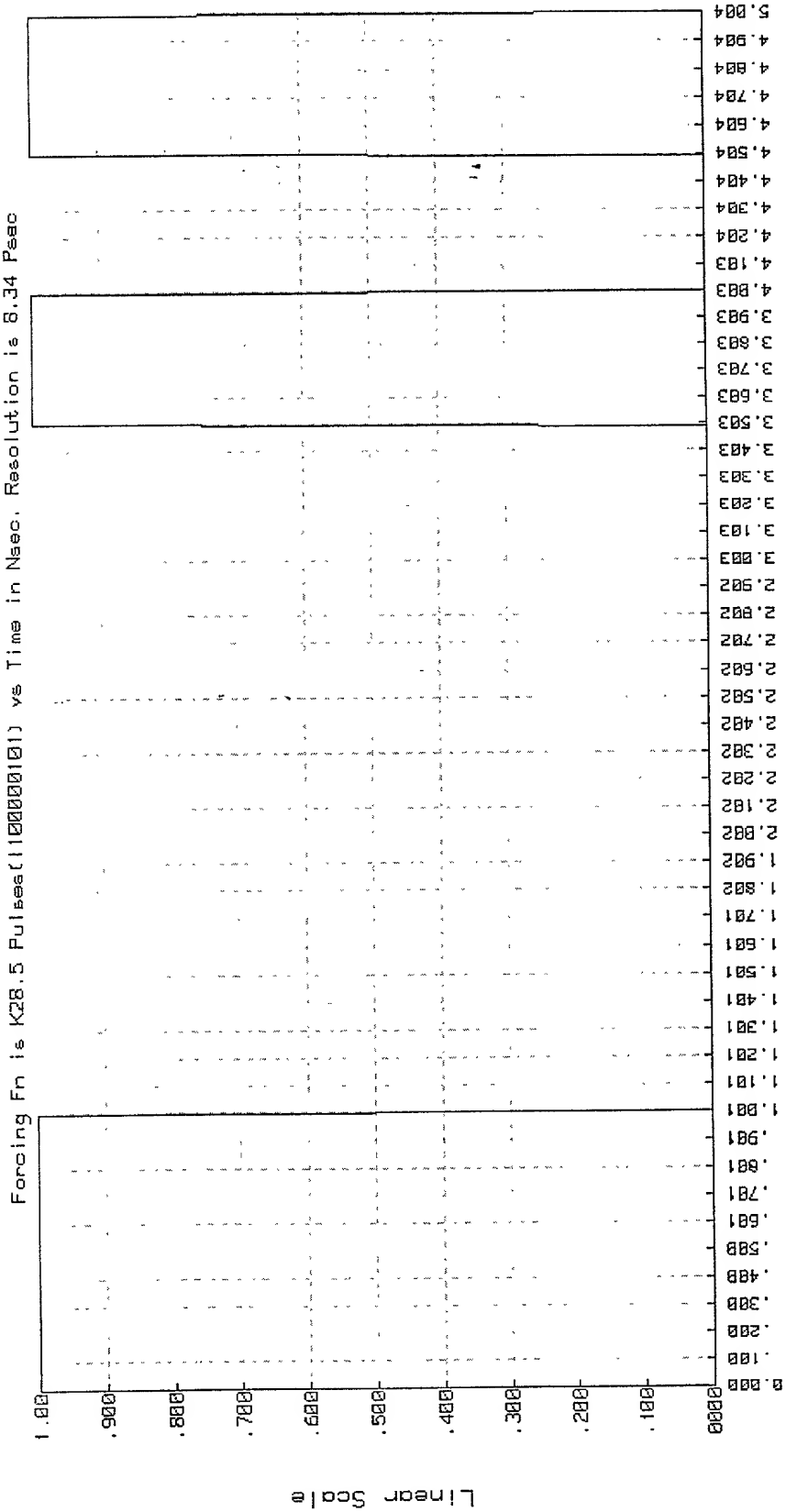

Forcing Fn is K28.5 Pulses(1100000101) vs Time in Nsec. Resolution is 8.34 Psec
Linear Scale
0.000
.100
.200
.300
.400
.500
.600
.700
.800
.900
1.00
.000
.098
.198
.298
.398
.498
.598
.698
.798
.898
.998
1.098
1.198
1.298
1.398
1.498
1.598
1.698
1.798
1.898
1.998
2.098
2.198
2.298
2.398
2.498
2.598
2.698
2.798
2.898
2.998
3.098
3.198
3.298
3.398
3.498
3.598
3.698
3.798
3.898
3.998
4.098
4.198
4.298
4.398
4.498
4.598
4.698
4.798
4.898
4.998
5.098

FIGURE 29

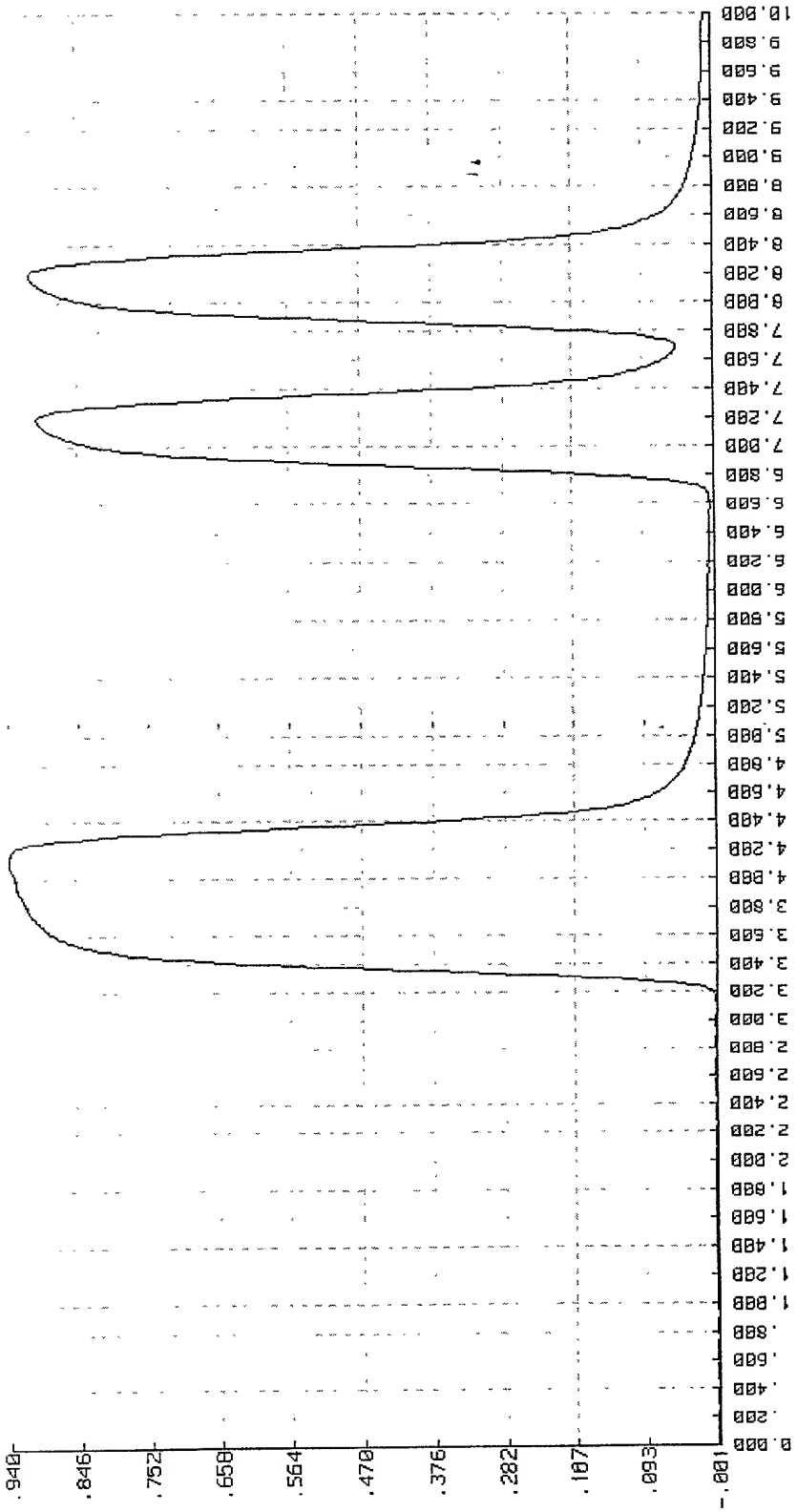

10.000
9.800
9.600
9.400
9.200
9.000
8.800
8.600
8.400
8.200
8.000
7.800
7.600
7.400
7.200
7.000
6.800
6.600
6.400
6.200
6.000
5.800
5.600
5.400
5.200
5.000
4.800
4.600
4.400
4.200
4.000
3.800
3.600
3.400
3.200
3.000
2.800
2.600
2.400
2.200
2.000
1.800
1.600
1.400
1.200
1.000
.800
.600
.400
.200
0.000
.940
.846
.752
.658
.564
.470
.376
.282
.187
.093
-.001

FIGURE 30

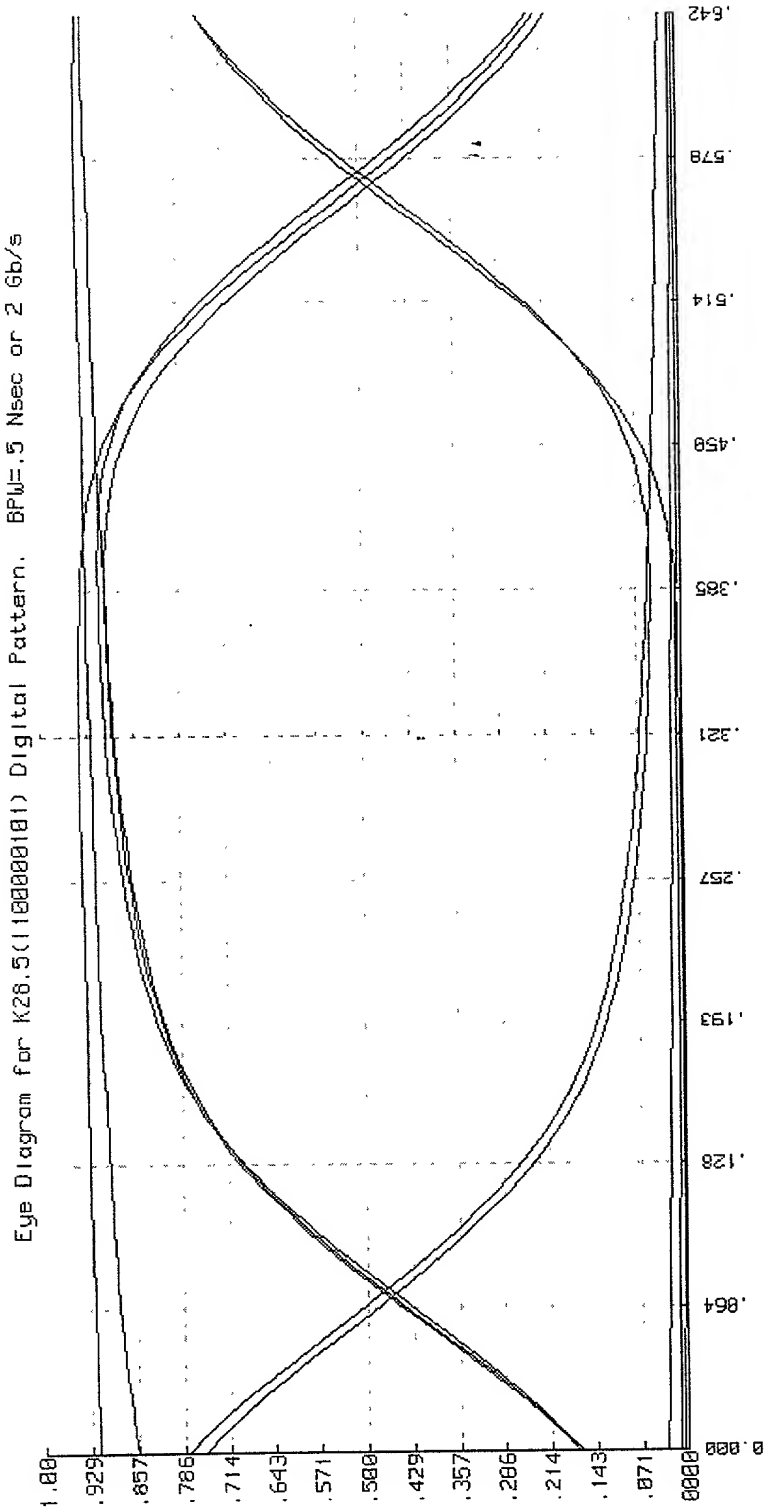

Eye Diagram for K28.5(1100000101) Digital Pattern. BPW=.5 Nsec or 2 Gb/s
1.00
.929
.857
.786
.714
.643
.571
.500
.429
.357
.286
.214
.143
.071
0000
0.000
.064
.128
.193
.257
.321
.385
.450
.514
.578
.642

FIGURE 31

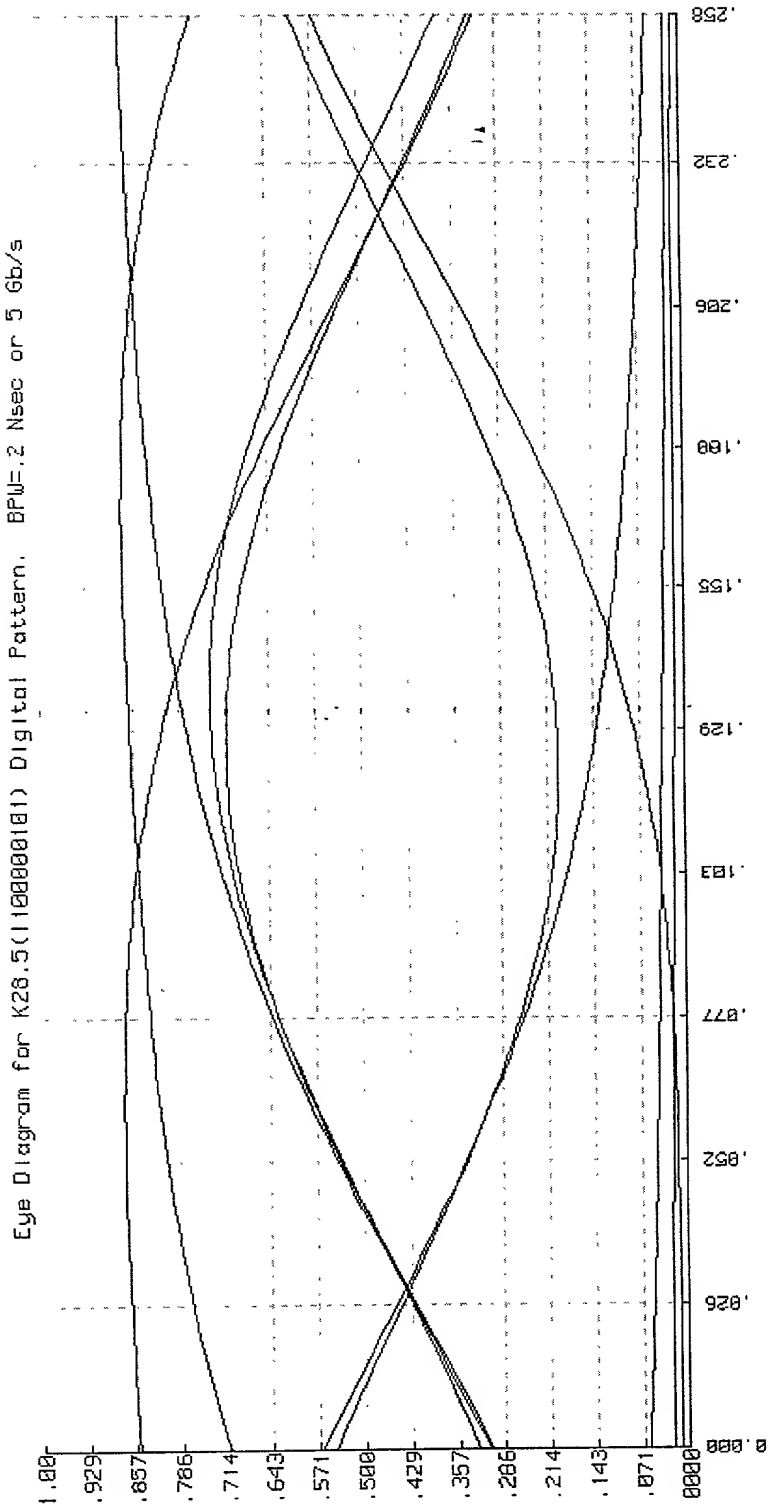

Eye Diagram for K28.5(1100000101) Digital Pattern. BPW=.2 Nsec or 5 Gb/s
1.000
.929
.857
.786
.714
.643
.571
.500
.429
.357
.286
.214
.143
.071
.000
.000
.026
.052
.077
.103
.129
.155
.180
.206
.232
.258

FIGURE 32

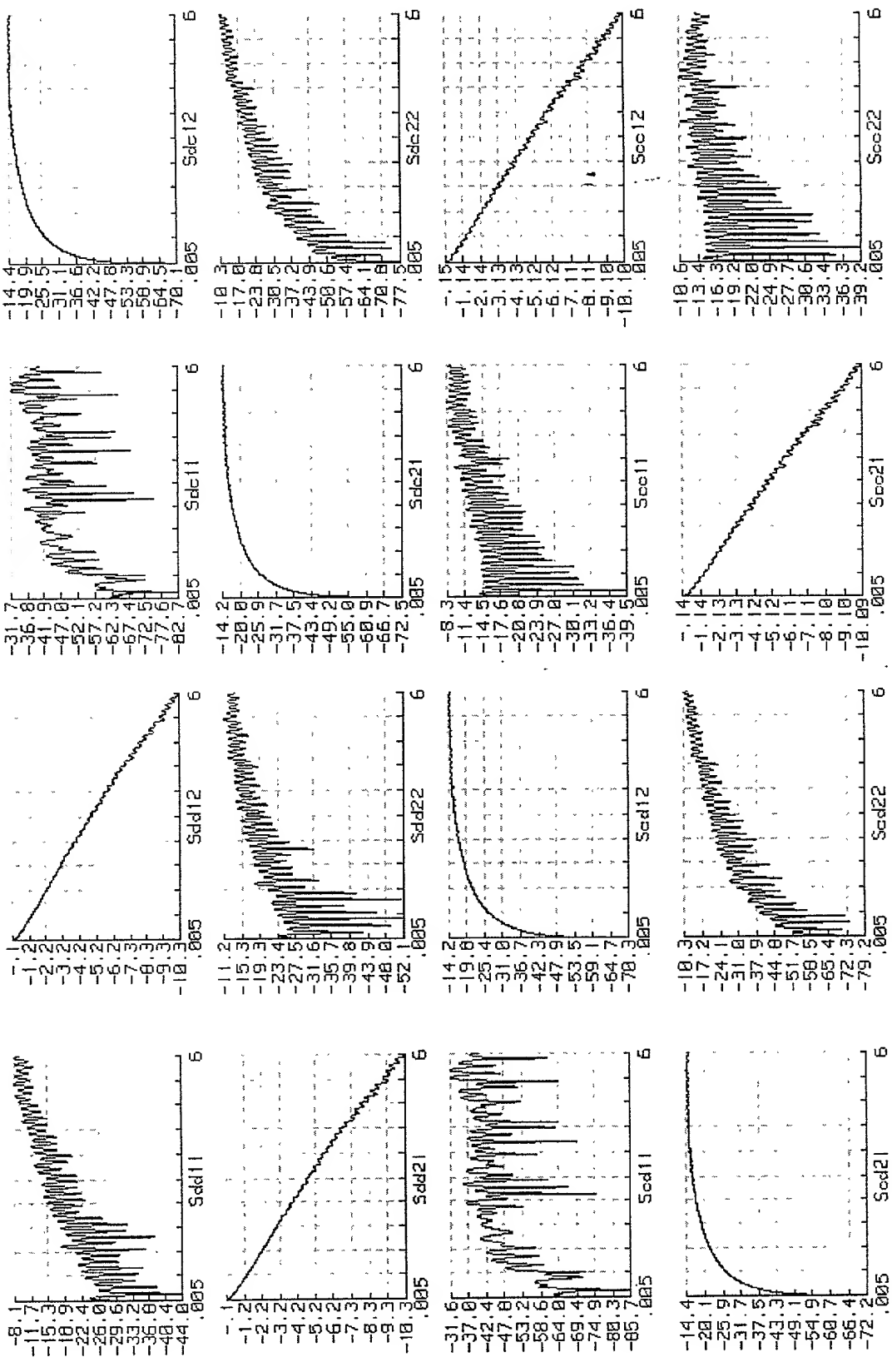

Sdd11
Sdd21
Sdd12
Sdd22
Scd11
Scd21
Scd12
Scd22
Sdc11
Sdc21
Sdc12
Sdc22
Scc11
Scc21
Scc12
Scc22

FIGURE 33

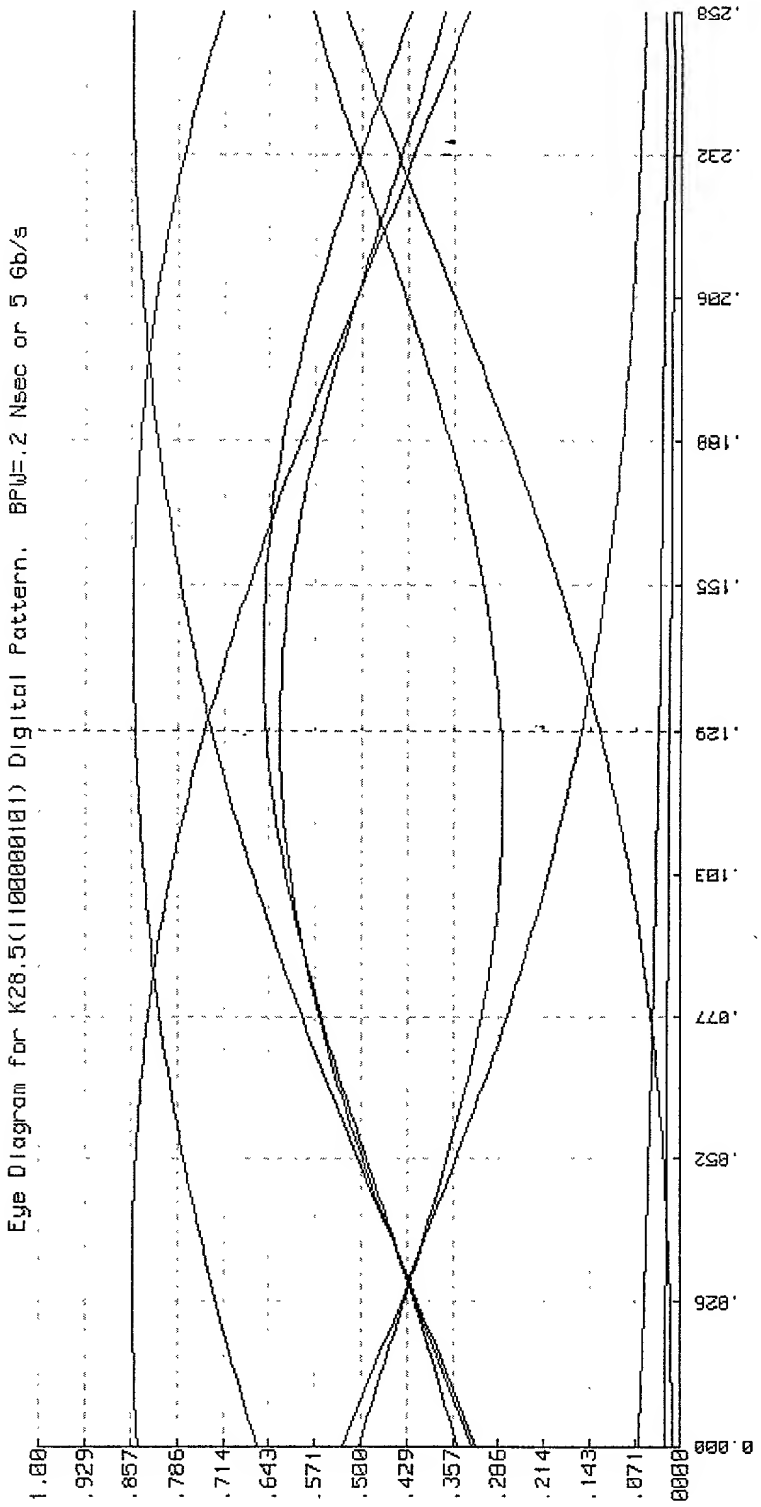

Eye Diagram for K28.5(1100000101) Digital Pattern. BPW=.2 Nsec or 5 Gb/s
1.00
.929
.857
.786
.714
.643
.571
.500
.429
.357
.286
.214
.143
.071
.000
.000
.026
.052
.077
.103
.129
.155
.180
.206
.232
.258

FIGURE 34